

Consumer choice towards Renewable Energy

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The Fukushima nuclear accident in March 2011 had a great impact on the European energy policy. The federal government in Germany decided to temporarily shut down the old generation of nuclear reactors and approved legislation on revamping Germany's sweeping plan to generate more than 40 percent of its energy needs through renewable resources by 2025. Renewable energy is an energy source that is widely considered to have less of an ecological impact than a conventional energy source. Despite that there is a growing consensus that the green market is significant and that companies can profit by improving environmental performance and developing green products, not all green products are successful in garnering customer interest. Consumers' purchasing behavior is not necessarily greener than before and often, strongly expressed concerns for the environment are not reflected in consumption practices. Therefore, the aim of this study was to find out what factors influence the consumer choice towards renewable energy. A literature review provided several factors influencing consumer choice towards renewable energy. Further, an interview with a renewable energy provider has been conducted. The study found that the main factors relating to an adoption of renewable energy are energy cost reductions, energy supplier independency, increasing market price for energy, positive recommendations from people within the social network as well as financial support through grants. New factors found directing people towards a rejection are relating to the technological development and optic. The study concludes that renewable energy provides a lot of benefits, and should be adopted by many more people. Since many people still lack a lot of knowledge toward renewable energy, it is very important to increase the availability of information as well the knowledge towards renewable energy. Therefore, organizations promoting renewable energy need to get more active within their marketing work. Since a big factor influencing consumers towards their choices are still recommendations from people within their social network, organizations should put a lot of effort in satisfying existing customers, so that those go outside and further recommend them by others. In this way the market share for renewable energy can be increased.

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1. INTRODUCTION

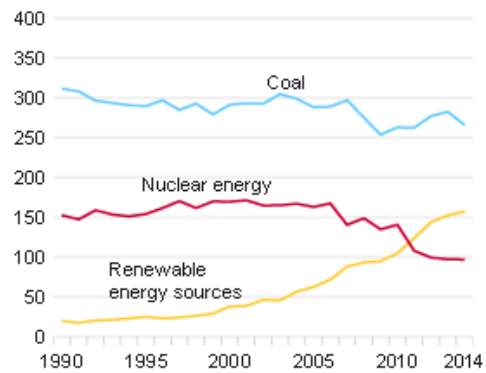
The Fukushima nuclear accident in March 2011 had a great impact on the European energy policy. Therefore, the federal government in Germany decided to temporarily shut down the old generation of nuclear reactors and re-examine the safety of all national nuclear power facilities. As the news report, Chancellor Angela Merkel's government approved legislation on revamping Germany's sweeping plan to generate more than 40 percent of its energy needs through renewable resources by 2025 (Eddy, 2014). For this, the German renewable Energy act (EEG) has become law in 2014, with the purpose to facilitate a sustainable development of energy supply, particularly for the sake of protecting our climate and the environment, to reduce the costs of energy supply to the national economy, also by incorporating external long-term effects, to conserve fossil fuels and to promote the further development of technologies for the generation of electricity from renewable energy sources (§1 EEG, 2014).

Figure 1 and 2 show the share of energy sources of the gross electricity production within Germany. Both figures make it obvious of how fast the share of renewables in Germany has increased (Destatis, 2014). In 2014 approximately 43% of the total gross electricity production was based on coal. This is a marked decrease from 1990 when brown and hard coal accounted for 57% of the power generated. In the past few years, gross electricity production from coal has gone up again: power generation from hard coal rose from 108 to 109 billion kilowatt and electricity generation from brown coal increased from 146 to 156 billion kilowatt hours. Although, coal still was the most important energy source in 2014, the importance of renewable forms of energy is on the rise as well. While renewable energy sources had accounted for only just fewer than 4% of the total energy production in 1990, their share had risen to as much as 26% by 2014. Nuclear power, in contrast, is becoming less important: in 1990, 28% of the total gross electricity produced came from nuclear power plants but that figure was down to 16% by 2014 (Destatis, 2014).

KEY FIGURES	
Gross electricity production 2014	
Brown coal	25.4%
Nuclear energy	15.8%
Hard coal	17.8%
Natural gas	9.5%
Mineral oil products	1.0%
Renewable energy sources	26.2%
Other energy sources	4.3%

Figure 1: Gross electricity production in 2014 (Source Destatis, 2014)

Gross electricity production by energy source in kWh bn



2014: Preliminary result.
 Source: AGEE-Stat and AGEB.
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Figure 2. Gross electricity production by energy source (Source Destatis, 2014).

Green energy, such as renewable energy is an energy source that is widely considered to have less of an ecological impact than a conventional energy source (Harmon and Cowan, 2009). According to Harmon and Cowan (2009), green-energy is a new product which would enable organizations and individuals to meet both economic and green criteria that impact customer value creation. Given the present trends of increasing energy use and requirements to minimize environmental impact, green energy adoption may become a key element of strategies to ensure long-term economic growth (Harmon and Cowan, 2009).

Despite that there is a growing consensus that the green market is significant and that companies can profit by improving environmental performance and developing green products, not all green products are successful in garnering customer interest. Customer surveys of attitudes toward, and even intended purchase of, green products often substantially overestimate actual product demand (Wiser, 1998). Consumers' purchasing behavior is not necessarily greener than before and often, strongly expressed concerns for the environment are not reflected in consumption practices (Ku et al., 2012). Huang and Lin (2012) report about consumers who show concern over environmental issues, but those are slow to translate such concerns into actually going green (Huang and Lin, 2012). Further, a study reports that consumers' sympathetic to environmental issues do not necessarily adopt green electricity. According to Ozaki (2009) this is due to lack of strong social norms and personal relevance, inconvenience of switching, uncertainty about the quality of green electricity and lack of accurate information.

People nowadays have the ability to choose their electricity providers, thus, having the choice to decide whether to use conventional or renewable energy (Bird et al., 2002). However, switching from "grey" to "green" is not as straightforward as one might think. Households have to consider a large number of issues possibly influencing their decision (Arkesteijn and Oerlemans, 2005).

Considering the facts mentioned above, on the one hand there is indeed a rising concern for the environment from people and government, resulting in that the importance of renewable forms of energy is on the rise but at the same time there are many people who still resist this new alternative energy source, the following Research question raises:

What factors influence the consumer choice towards renewable energy?

This research will contribute to the existing knowledge and will try to find factors that may play a role on consumer choice towards the adoption or rejection of renewable energy. If this study succeeds in finding factors influencing the consumer choice, renewable energy provider can contribute from this study in gaining a better understanding of how consumers make choices and can then try with their marketing departments to tackle on these factors in order to attract more customers in future. According to Harmon and Cowan (2009) companies are more likely to meet greater market success, as long as they do determine the values that are most important to their customers, effectively and then craft their messages accordingly.

The research paper is structured as follows. In the next section, a literature review based on the existing theoretical framework towards the influencing factors on consumer choice will be presented. The third section reports on the research method that is used within this study. After that, empirical results gained through an interview will be presented. The paper ends with a discussion and conclusion part, following by presenting the practical and scientific relevance, as well as limitations and recommendations for future research.

2. LITERATURE REVIEW

2.1 Definition green power/ energy

Green energy, also called “renewable energy” is defined by Omer (2008) as energy that is generated from natural and renewable resources. The term renewable energy is used to describe a wide range of naturally occurring, replenishing energy sources (Omer, 2008). Green energy sources are widely considered as energy sources that have less of an ecological impact than conventional energy sources. According to Bird et al. (2002) green power products are generally 100% renewable energy offerings and are produced from either a mix of several renewable resources or a single resource such as hydro or wind. Just a small numbers of these products are selling at the cost of conventional electricity while the majority have 10-30% premium price than conventional electricity (Bird et al., 2002). Harmon and Cowan (2009) define green energy as energy produced and used in ways that are not damaging to the environment (Harmon & Cowan, 2009). The term green energy is often interchangeably used with sustainable energy, alternative energy and renewable energy. Green energy alternatives for instance include geothermal power, wind power, hydroelectric power, solar power as well as biomass fuels (Harmon and Cowan 2009). According to Omer (2008), using alternative approaches to energy generation and exploitation is the key factor in reducing and controlling CO₂, thus, contributing to global warming.

Due to its ease of understanding and clear as well as short explanation towards what renewable energy is, the definition adopted for this study is the following by Omer (2008) which is that renewable energy technologies rely on the use of natural energy resources which are continually replenished and will therefore not run out.

2.2 Centralized versus Decentralized Energy Systems

The following section presents a short comparison of centralized and decentralized energy systems in order to develop an understanding towards the differences in energy generation.

Traditionally, the power industry has focused on developing central power stations and transmitting generation loads across long transmission and distribution lines to consumers in the region, meaning that the production of electricity is often a long distance away from its end users (Balachandra et al., (2009).

A decentralized energy system is a relatively new approach in the power industry in most countries. It is characterized by locating of energy production facilities closer to the site of energy consumption, which means that power sources are put closer to the end user. A decentralized energy system mainly focuses on meeting local energy needs (Balachandra et al., (2009). It allows for more optimal use of renewable energy as well as combined heat and power, reduces fossil fuel use and increases eco-efficiency. The local generation reduces transmission losses and lowers carbon emissions as well as distribution inefficiencies and related economic and environmental costs (Unescap, 2015). Additionally, a secure supply is increased nationally as customers don't have to share a supply or rely on relatively few, large and remote power stations. Decentralized energy can offer more competitive prices than traditional energy. While initial installation costs may be higher, a special decentralized energy tariff creates more stable pricing (Balanchandra et al., 2009).

The focus within this study will be on decentralized energy systems because decentralized energy systems provide promising opportunities for deploying renewable energy sources locally available.

2.3 Renewable energy - Benefits and Challenges

The following section puts focus on benefits and challenges of renewable energy. In most countries renewable energy policy is evolving rapidly. The reasons for this are the structural changes in the energy and environment policy framework and the role renewable energy can perform in reducing greenhouse gas emissions. Generating electricity with renewable energy sources means substituting conventional energy sources and therefore saving of scarce fossil resources and non-emitting greenhouse gases (Menges, 2003). Further, the appeal of renewables continues to grow reduced dependence on imported energy resulting in energy security and a more diversified resource base as well as a contribution to an increase in local employment and income and their working as a hedge against volatile fossil fuel prices, as well as avoiding risks of disruption in fossil fuel supplies (Haas et al., 2008). “Energy independence” for instance, is often associated with green energy which promotes product benefit. Especially from the consumer's perspective this may be appealing. The economic dimension of the consumer's green-energy perspective is concerned with keeping prices low and stable. Also things like subsidies and tax credits to purchase green-energy systems may be emphasized and when consumers evaluate energy independence as an issue, they may consider that new energy systems are likely to be built in an area close to the local market, thereby providing local economic returns and becoming a source of local jobs (Haas et al., 2008).

Considering some negative sides of renewable energy, Harmon and Cowan (2009) state that despite solar and biomass may eventually offer significant competition, the prices for these technologies are likely to be considerably higher for a number of years (Harmon and Cowan, 2009). The evaluation of the feasibility of green energy is about comparing the price per kilowatt hour (kWh) of energy generated by conventional coal or gas turbines with that of wind, hydropower, or photovoltaic

generated energy. Also here, Haas et al. (2008) state that the cost has been demonstrably lower for conventional sources than renewable sources which has served as a barrier to adoption. Renewables face a number of barriers if they are to contribute to the market on a large scale. The major barrier however is still the current cost disadvantage relative to electricity generated from fossil or nuclear fuels. Part of this cost disadvantage is due to the fact that most conventional technologies have received - and continue to do so - significant direct and indirect subsidies including those offered to nuclear energy and oil and gas exploration (Haas et al., 2008).

Aside from technological and investment obstacles there are institutional, political, and legislative barriers as well as problems arising from lack of sufficient grid capacity and public and political awareness in many countries. Another barrier includes lack of adequate recognition and support in regulations (Haas, 2008).

Beside high initial capital costs coupled with lack of fuel-price risk assessment, there are imperfect capital markets, lack of skills or information, poor market acceptance, technology prejudice, financing risks and uncertainties, high transaction costs, and a variety of regulatory and institutional factors (Beck and Martinot, 2004). Beck and Martinot (2004) state that those barriers can be considered as market distortions that unfairly discriminate against renewable energy as well as having the effect to increase the costs of renewable energy to relative to the alternatives (Beck and Martinot, 2004).

Harmon and Cowan (2009) come to the conclusion that conventional energy sources will likely continue to dominate the energy market for the next several decades.

In conclusion there is this new form of energy generation through renewable energy sources which is providing several benefits for consumer and environment but at the same time there are existing barriers that influence consumers towards its adoption.

2.4 Consumer choice

The consumer stands between the choices of adopting or rejecting renewable energy. Therefore, it is interesting what factors influence consumer towards their choices. Consumer choices concerning the selection, consumption, and disposal of products and services can often be difficult and are important to the consumer, to marketers, and to policy makers. One can infer from recent trends in the nature and structure of marketplace that the importance of understanding consumer decision making is likely to continue (Bettmann et al., 1998). A choice is characterized by conflict, uncertainty, and cognitive activity, and related psychological processes can be observed. When talking about choices, Hansen (1976) identifies three aspects:

- 1. There must be two or more choice alternatives.**
- 2. The choice alternatives must arouse a certain amount of conflict.**
- 3. Cognitive processes aimed at reducing the conflict must occur**

The first aspect relating to the "choice alternative" is that consumers currently stand between the decisions whether to use conventional energy or switch to the use of renewable energy. Since there are numerous problems associated with using energy generated from fossil fuels, consumer luckily have the choice when it comes to where the energy comes from and the right to choose green energy rather than traditional energy. Bird et al. (2002) report about that many electricity customers are gaining the ability to choose their electricity providers for

which nowadays cleaner power options are available. Recent trend indicate that there is a strong market case for green energy. Ottman et al. (2006) report about alternative green-energy sources such as wind, hydropower, and solar that are becoming readily available and compare very favorably with even the best fossil fuel, natural gas, on a risk-adjusted economic-value basis. Solar energy, by far the most expensive renewable currently has the most potential to disrupt current energy patterns and the technology improves. Since consumers, governments and firms are becoming increasingly cognizant of the perceived threats from anthropogenic climate change, increasing economic costs, geopolitical uncertainties, and environmental effects of fossil fuels, efforts to increase the emphasis on the development of green energy is likely to meet market acceptance (Ottman et al., 2006).

The second aspect assumes that the choice alternative arouses a certain amount of conflict, which is characterized by conflict, uncertainty, and cognitive activity, and related psychological processes can be observed. For example, this is the case when the individual is "thinking" or exposed to information. When he is reading, listening to a message, or talking, conflict, uncertainty, and cognitive processes occur (Hansen, 1976).

Relating to renewable energy, the conflict hereby could relate to the costs of this new alternative form of energy consumption. As Haas et al. (2008) state that the cost has been demonstrably lower for conventional sources than renewable sources, which has served as a barrier to adoption. However, the willingness to pay, which indicates to which extent customers accept a price premium for green electricity, varies widely among research papers. Whereas some studies report that a barrier to purchasing green electricity is the increased price (Krauesel and Möst, 2012), other studies show that consumers have positive attitudes towards renewable energy and a majority of consumers report a willingness to buy electricity generated from renewable energy sources, even at a premium (Heinzle et al., 2013).

The third aspect relates to cognitive processes which reduce the conflict. Burton (2002) assumes that consumer education should be specifically related to the organization and its products because it is of great interests of marketers to create knowledge of a product or service alternative in order to attract more interest for the own product comparable to the competitive product (Burton, 2002). Consumer research recognizes knowledge as a characteristic that influences all phases of the decision process. However, from a consumer perspective, information regarding energy is confusing from the beginning because energy sources are not well understood (Maula et al., 2013). For the development of renewable energy technology, future work is needed to shed light on people's in depth-knowledge about the importance of using renewable energy technology. Further, the general public should be allowed to learn more about the advantage of using renewable energy technology (Maula et al., 2013). However, one study report the negative perceptions towards renewable energy are caused by the lack of knowledge and public understanding, but at the same time claims that there is limited evidence that more informed individuals are accepting renewable energy technologies (Maula et al., 2013).

Choices are linked to the consumer behavior which is a study of the processes involved when individuals or groups select, purchase, use, or dispose of products, services, ideas, or experiences to satisfy needs and desires (Buttle, 1998). Consumer theories have provided a range of insights into principles that direct or influence consumer choice. The following section presents a review of existing theories on consumer choice including the post Keynesian theory, the

theory of consumption values, the concept of 4Ps and green marketing strategies as well as the literature related relating to factors influencing the consumer choice towards renewable energy.

2.5 Factors influencing consumer choice towards renewable energy

In order to find factors influencing consumer choice, the study will put focus at the Post Keynesian theory and the theory of consumption values. The reason behind these two theories is to look at factors that relate more to the consumers inner such as the desire of satisfaction including feelings and emotions when deciding for the purchase of a product. The concept of 4Ps and the green marketing strategies are used in order to find factors influencing consumer choice from the view of organizations. Since this study later on plans to interview a company with regard to factors influencing consumer choice, using theories which are created for organizations in order to improve their marketing strategies according to the needs of consumers, are seen as appropriate.

2.3.1 Post Keynesian theory

The Post Keynesian theory of consumer choice is based on the indications left by the best-known and most productive Post Keynesian authors, such as Joan Robinson, Luigi Pasinetti, Edward Nell, Philip Arestis, or Alfred Eichner, and arises from a multitude of influences, including those of socioeconomists, psychologists, marketing specialists, and individuals such as Herbert Simon and Georgescu Roegen (Lavoie, 2005).

Within the post-Keynesian consumer theory, consumers appear to utilize principles that occur in a priority order on which they make proceduralised choices relative to their needs (Cook et al., 2007). Procedural rationality asserts that consumers have rules that allow them to make decisions. These rules are based on non-compensatory procedures which need not take into account all elements, but just those important to the individual. If the criteria meet those of the individual, then their needs are satisfied and they proceed with the purchase. Further, the post-Keynesian Theory assumes that consumers' needs are satiable, separable, sub-ordinate to each other, and can 'grow'. Once a level of consumption has been reached, the individual as the consumer is no longer satisfied and moves onto another 'need' (Cook et al., 2007).

Learning from this is that if one need is fulfilled, the consumer will seek to fulfill another need in order to keep satisfied. For instance, every consumer has the need to consume energy, now after having fulfilled this; the consumer might also aim to have an energy which provides more cost savings etc. Thus, consumer might look for another energy source which is fulfilling the need towards cost savings. A choice decision by consumers therefore depends on the level of satisfaction the product reaches when purchasing it. If companies create a product which offers more benefiting and need fulfilling aspects, the more likely it is that the consumer makes a choice towards its adoption; leading to that those companies might increase their market share.

2.3.2 Theory of consumption values

The study by Huang and Lin (2012) applied the theory of consumption values to determine the influencing factors on consumer choice behavior regarding green products. The underlying meaning and motivation of consumption within this

theory may depend on consumption values, and it is commonly accepted that effective marketing communications must recognize the relationship between consumer values and motivation. The theory of consumer choice of values is able to contribute to the general understanding of consumer choice behavior and assist practitioners, policy makers, and academic researchers in determining what motivates specific choices (Huang and Lin, 2012).

Consumption values refer to subjective beliefs about desirable ways to attain personal values by consuming items. People achieve personal values (or goals) through actions or activities, such as social interaction, economic exchange, possession, and consumption. Berger et al. (2013) present in their study a model that help to comprehend how consumers make decisions in the marketplace. Within this model they assume that the choices consumers make are based on their perceived values and that the perceived values contribute distinctively to specific choices. Since the model examines what the product values are that attract consumers, it can be viewed as a way to understand the attitude toward the product, making this a proactive way to understand product acceptance and adoption. Consumers attach different values to products and product groups and this affects their motivation to purchase. These values include the following: **Functional value, social value, emotional value, epistemic value, and conditional value**. All consumption values influence consumers' purchase behavior (Berger et al., 2013).

The theory of consumption values has been earlier applied by Huang and Lin (2012) in order to determine the influencing factors on consumer choice behavior regarding green products.

The first value, **functional value** refers to the consumer's perception of price and quality of a product and the perceived utility acquired from an alternative's capacity for functional, utilitarian, or physical performance (Yousefi and Zand Hessami, 2013). Huang and Lin (2012) come on the conclusion that the main influencing factors on consumer choice behavior regarding green products do not include functional values such as price and quality but psychological benefit like desire for knowledge, novelty seeking, and specific conditions. Another study however, finds that the price and the quality of products are one of the most significant factors that consumers consider them while purchasing green products (Yousefi and Zand Hessami, 2013).

The second value, **social value** refers to the perceived utility acquired from an alternative's association with one or more specific social group (Yousefi and Zand Hessami, 2013). With regard to the second value, social value, Huang and Lin (2012) conclude that social value does not have a significant impact on choice behavior. This may because some respondents did not feel that going green increases social approval or makes a good impression.

Concerning the **emotional value** relates to the perceived utility acquired from an alternative's capacity to arouse feelings or affective states (Yousefi and Zand Hessami, 2013). Huang and Lin (2012) find out that consumers may go green in response to moves to tackle environmental problems. The characteristics of green products (for example, recycling potential, low pollution, and economy of resources) may arouse consumer emotions, such as protective feelings toward the environment or a general impulse to do well.

Further value relates to the **epistemic value** which is defined as the perceived utility acquired from an alternative's capacity to arouse curiosity, provide novelty, and/or satisfy a desire for knowledge. Thus, entirely new experiences certainly provide epistemic value. An alternative that provides a simple change of

pace can also be imbued with epistemic value. The alternative may be chosen because the consumer is bored or satiated with his or her current brand, is curious, or has a desire to learn (Gross et al., 1991). Consumer research has recognized knowledge as a characteristic that influences all phases in the decision process. Additionally, consumer knowledge of a product plays an important role in determining new product adoption. Thus, when consumers encounter a new product, in making the decision to adopt it, they evaluate it by a combination of familiarity with the known product category as well as through the combination of the product's background and the information which is gained, associated with new product (Huang and Lin, 2012). Huang and Lin (2012) conclude that epistemic value of green products has a significant positive impact on consumer choice behavior, resulting in consumers with a curiosity or desire for knowledge, or who like novelty, being more likely to choose them. However, 73% of the respondents within their study lacked an understanding of the scope of green products and their characteristics.

The **conditional value** is described as the perceived utility derived from an alternative as the result of a specific situation or set of circumstances facing the decision maker (Huang and Lin, 2012). Regarding conditional value, Huang and Lin (2012) conclude that it is a factor of influence on consumer choice behavior, with an important connection to product characteristics, exerting a positive impact on consumer choice. Two aspects attached to the value are global warming and threats to the environment. Therefore, governments and green groups must continue to emphasize the significance of weather changes and how they relate to environmental detriment. In addition, governments and the various sectors of business could provide discounts or promotions for green products, creating greater opportunities for boosting their condition (Huang and Lin, 2012). Governments and green groups provide subsidies or promotions that encourage people to go green (Sovacool, 2009). There is a growing consensus that intervention by the national governments may be essential to effectively promote renewable power generators and energy-efficiency programs. The best way to promote renewable energy and energy efficiency is due government intervention (Sovacool, 2009). Since renewable energies have a number of positive effects; these have been supported by German public policy for many years. This support is currently demonstrated very successfully by the German Renewable Energy Act (EEG). Billharz and Wüstenhagen (2004) investigate the relative importance of energy policy and green power marketing in growing the German market for renewable energy. More than a decade of consistent policy support for renewables under the feed-in law (StrEG) and its successor (EEG) has been a very important driver for increasing renewable electricity (Billharz and Wüstenhagen, 2004).

Concluding from this, environmental concern, level of education and amount of information towards a product, as well as governmental regulations are factors that might influence consumer choice.

2.3.3 4Ps – Marketing mix

The concept of 4Ps (Product, price, place and promotion), also known as the marketing mix is developed for successful marketing penetration of a product to fit according to the customer's needs as well as wants (Menegaki, 2012). Since, the concept of 4Ps fits according to the customer needs and wants, price, product, place and promotion can be regarded as factors that influence the consumer with regard to their choices (Menegaki, 2012).

The **Price** is the total cost to the customer of buying a product (Blythe, 2009). Pricing constrains consumer choices in energy use and products in several ways, including the cost of generating more sustainable power at a residential level as well as the cost of purchasing green power and how that is explained to consumers, and the difficult choices consumers make in purchasing new products (Heinzle et al., 2013). The cost to consumers of generating their own power through local windmills or solar panels remains prohibitive, and in most cases, it pushes these options into the luxury product category (Heinzle et al., 2013). The willingness to pay, which indicates to which extent customers accept a price premium for green electricity, varies widely among research papers. However, whereas some studies report that a barrier to purchasing green electricity is the increased price (Krauesel and Möst, 2012), other studies show that consumers have positive attitudes towards renewable energy and a majority of consumers report a willingness to buy electricity generated from renewable energy sources, even at a premium (Heinzle et al., 2013).

The **Product** is the bundle of benefits which the supplier offers the purchasers (Blythe, 2009). Ghani et al. (2012) define a product as anything that can be offered to a market for attention, acquisition, use, or consumption that might satisfy a want or need. Furthermore, Ghani et al. (2012) report that the product in the marketing mix is about propositions/messages/promises. For instance, 'Renewable energy sources- no hidden bill for the environment', 'Renewable energy sources- a preventive for climate change, 'Pay a bit higher today, so that you do not pay much higher tomorrow'. However, Ozaki (2011) states that people are uncertain about the quality of green electricity (e.g. 'is it really generated from renewable sources?' and 'is it reliable?'). The nature of the contract and costs can cause some anxiety which in turn leads to rejection. Potential adopters, especially those who have high green values and awareness need accurate information to evaluate and make a decision. Currently, information is fragmented and inaccurate (Ozaki, 2011).

The **Place** is where the exchange takes place (Blythe, 2009). It involves making it as easy as possible for customers to find the goods around and make the purchase, as well as using the product (Ghani et al., 2012). Whereas it is typical of a centralized energy system that the production of electricity is often a long distance away from its end users, renewable energy and decentralized energy systems clearly offer a benefit with regard to the place because decentralized energy systems locate the energy production facilities closer to the site of energy consumption, which means that power sources are put closer to the end user. In case of a switch from conventional energy use to renewable energy, the new supplier self gets in touch with the previous supplier to make arrangements towards the switch. Also, regarding buying renewable energy technologies the support and consulting is provided by renewable energy provider themselves. If customers for instance aim to install a photovoltaic, they get mostly visited by trained staff of that particular company who make some overview of the current electricity supply in order to come up with a more customized and benefitting solution.

Promotion is defined as sales promotion, advertising, personal selling, public relations and direct marketing (Ghani et al., 2012). Promotion encompasses all the things that invite one to buy renewable energy sources. Once the "product" shapes one's mind, then 'promotion' element opens up ways for the consumer to purchase the product or in the case of social marketing to adopt behavior (Ghani et al., 2012). Huang and Lin (2012) conclude that there is not much promotion of going

green except by government institutions and certain sectors of the business.

The concept of 4Ps aims to create a product that a particular group of people want, ease the purchase as well as consumption of that particular product, and price it at a level which matches the value they feel they get out of it; and does all that at a time they want to buy. The 4P's were formalized and developed to ensure the creation of a successful marketing strategy. Through the use of this tool, the attempt is to satisfy both the customer and the seller. When properly understood and utilized, this mix has proven to a key factor in a product's success (Blythe, 2006).

2.3.4 Green Marketing Strategies

This section presents next to the marketing strategy according to the 4Ps, other ways which improve consumer appeal for environmentally preferable products. According to Ottman et al. (2006) green products follow three strategies: Consumer value positioning, calibration of consumer knowledge and credibility of product claim. All marketing activities must convince the consumers through identifying the basic product features.

In his article "Avoiding green marketing myopia", Ottman et al. (2006) presents ways to improve consumer appeal for environmentally preferable products. Ottman et al. (2006) suggests that all marketing activities must convince the consumers through identifying the basic product features. Therefore, successful green products follow three strategies: Consumer value positioning, calibration of consumer knowledge and credibility of product claim.

a. Consumer Value positioning

A firm should focus in designing a product, which performs better than the alternatives as well as promote and deliver the consumer-desired value of environmental products. Additionally, it should focus on broaden a mainstream appeal by bundling consumer-desired value into environmental products, such as fixed pricing for subscribers for renewable energy.

b. Calibration of Consumer knowledge

When designing marketing communication, Ottman (2006) stresses on the importance of educating consumers with marketing messages. Thus, a firm should always present product unique features, environmental benefits and solutions that matched with the Customer norms and values. For instance, "energy-efficiency saves money" or "solar power is convenient".

c. Credibility of Product Claim

A firm shall employ environmental product and consumer benefit claims "that are specific and meaningful and qualified for the consumers". Furthermore, a firm should procure eco-certifications from trustworthy third parties and educate consumers about the meaning behind those eco-certifications.

Ottman et al. (2006) conclude that effective green marketing requires applying those marketing strategies in order to make green products desirable for consumers.

2.3.5 Framework of Factors influencing consumer choice

Reviewing the literature above derived from the post Keynesian theory and the theory of consumption values as well as the concept of the marketing mix and the green marketing strategies, a framework has been created, see figure 1, which

summarizes the factors influencing the three aspects when considering consumer choice: 1. Choice alternative, 2. Conflict and 3. Cognitive processes.

According to the Post Keynesian theory, consumer will move onto another need once the level of consumption has been reached and the consumer is no longer satisfied. This need can be satisfied when deciding between existing alternatives. According to Hansen (1976) there must be two or more choice alternatives. The decision between those alternatives however, arouses a certain amount of conflict which relate to the cost and as the theory of consumption values assumes the lack of information and knowledge towards renewable energy available. Further, the cognitive process aims to occur in order to reduce the conflict. This cognitive process can reduce the conflict as derived from green marketing strategies and the theory of consumption values through governmental regulations in terms of government intervention and efforts done towards educating people about renewable energy as well as the amount of environmental concern. Lastly, marketing efforts relating to the concept of 4Ps, including price, promotion, place and product act as cognitive processes in order to overcome the conflict. Since the concept of 4Ps fits according to consumers' needs and wants; it might be regarded as a way which directs people towards an adoption of renewable energy.

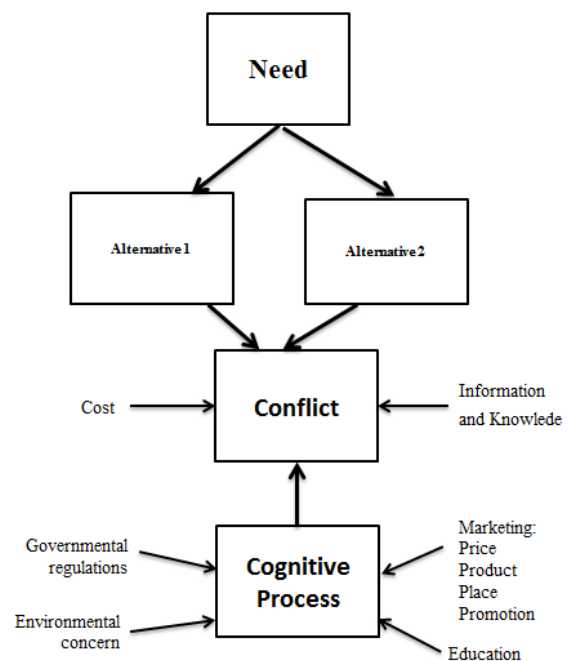


Figure 1. Factors influencing consumer choice

3. RESEARCH DESIGN

As research method, the method of a case study is adopted. According to Babbie (2013) a case study is an in-depth examination of a single instance of some social phenomenon. The limitation of a particular instance of something is the essential characteristic of the case study (Babbie, 2013). This enables to understand a particular case by looking closely at the details of each. Through case study methods, a researcher is able to go beyond the quantitative statistical results and understand the behavioral conditions through the actor's

perspective. Furthermore, a case study helps to explain both the process and outcome of a phenomenon through complete observation, reconstruction and analysis of the cases under investigation (Babbie, 2013).

The aim of this study is to find factors that influence a consumer towards its choice, adopting or rejecting renewable energy. Through the method of a case study the intention is to get more in depth information from a renewable energy provider because this study aims to help other renewable energy providers to understand what factors influence the consumers towards their choices.

There was also the opportunity to do surveys; however it is assumed that surveys offer just broad range information. Also, surveys tend to be comprised of standardized questions with answer possibilities, so that people just need to select an answer from the solutions given which can be also from disadvantage because the respondent is directed to a certain direction the researcher self is assuming beforehand which means that getting new insides within the topic is limited. The aim of this study is to get more information from the company and while conducting an interview with a renewable energy provider, the study will be able to understand the behavior of the consumers and their choice decisions towards renewable energy.

At first information is gathered through articles and interviews. The literature theories and scientific articles used in this research were accessed online from "Google scholar", "Science Direct" and "Scopus" as well as the UT library. Literature has been searched in the field of marketing and psychology mainly, regarding consumer behavior theories, consumer choice theories as well as consumer- decision making theories. Additionally, literature has been searched on the topic of renewable energy and its benefits as well as challenges.

In order to collect information from practice, one interview with a renewable energy provider will be conducted. Beforehand a questionnaire is created, consisting of open-ended and closed-ended questions. Whereas for open- ended questions the respondent is asked to provide his or her own answers, for closed-ended questions, the respondent is asked to select an answer from among a list provided by the researcher (Babbie, 2013).

The interview comprises of mainly open questions in order to avoid steering the respondent towards certain answers and to gain as much as information from the company. However, some closed question with possible answers will be asked as well, which is good to manage the interview. Also, closed questions are asked because they can be helpful to clarify issues. Additionally, some why and how questions as follow-up questions are proposed after those closed questions in order to gain more information. The questions mainly relate to the 'dependent' variable "consumer choice" will be asked. The interview starts with some general questions like what does the organization do and with which renewable energy does it work. Further, questions relating consumer choice is asked, for instance "Do you have problems with attracting customers?" "Why consumers choose you?" and "What does differentiate you from conventional energy supplier?" Other questions relate to the factors influencing choices, found in the literature review. Those include "How do you educate people on renewable energy?", "Do you think people are willing to pay for a switch from conventional energy to renewable energy?" or „Do you think governmental regulations can increase the number of customers?" The last question "What influences consumer choice towards renewable energy?" tries to find more factors influencing the consumer choice, other than those which this study is expecting beforehand.

The company which is going to be interviewed is N&A energy which is located in Germany. N&A is promoting renewable energy and is known as being a specialist for solar energy. I decided to interview this company, due to its popularity within the field of renewable energy.

4. DATA COLLECTION

The aim of this research is to find what factors influence consumers towards the choice regarding the adoption or rejection of renewable energy. Therefore, one interview has been conducted. The interview was given by the manager of N&A energy. Due to confidentiality reasons a fake name will be used for the company.

Known as the specialist for renewable energy, N&A energy calls itself the "infrastructure" to an innovative energy supply. N&A offers solution for private clients such as households to smaller and bigger business clients as well as investors. For this, the company is working within three areas: N&A E-Home, N&A E-Company and N&A E-Invest. N&A works with solar energy and is a leading supplier of photovoltaic systems for integrated solutions in the field of solar power, roof -mounted systems, inverters and energy storage devices. Next to solar systems, N&A product portfolio also specializes within the areas of wind power, heat pumps and electric vehicles. N&A offers experienced project development, powerful assembly and independent service.

N&A provides its products in Germany and Turkey. The aim of N&A energy is to supply their products mainly to the local people because having customers more far away does not have any use with regard to the repairing and service work. In Turkey, N&A is engaged in just bigger projects, such as the installations of photovoltaics at schools, universities or shopping malls.

N&A has three types of customers: private clients (for instance new home-builder, portfolio property as well as real estates which need to get refurbished), business customer and Investors.

As it is with all products, also this company has to do big efforts in order to increase the number of customers. The company is chosen by its customers due to their reputation and being operating since 12 years within the area of photovoltaic. Therefore, the company is having great experience and being able to offer a diversified portfolio. Next to the installation of the photovoltaic system, N&A additionally offers a great service including tele monitoring, maintenance, thermography, cleaning, and optimization as well as troubleshooting.

During the Interview, questions regarding the influencing factors towards the choice with regard to renewable energy have been asked. For that the manager mentioned several factors.

The first one is relating to the influence of governmental regulations. The situation before in Germany was that there was a high EEG-fee as well as high system prices for the photovoltaic (Systempreise). The manager said:

"Especially, in 2012, when the EEG-fee was very high, we had to cope with a decrease of customers because many people starting doubting if photovoltaic is really worthy. This led to, that the number of customers decreased rapidly".

The second factor relates to the market price of energy. For this the manager mentions:

"Since energy costs are rising continually (in the last 12 years they have doubled), we benefit from an increasing number of

customers because people are confronted with high electricity costs. Therefore, people tend to decide for a photovoltaic because this solution helps them to benefit from long term energy cost reductions”.

Another reason towards the adoption is about customers who aim to be independent from energy suppliers while producing the energy by themselves within their own house. The customer benefits from being up to 80% independent from its electricity supplier, which means he just needs to buy 20% from a conventional energy supplier.

The performance of photovoltaic is positively regarded by the customers. “Photovoltaic systems remunerates for households and businesses”, said the manager and further explained the reason as following: “... because customers are able to produce their own electricity for less than 10 cents kWh. Whereas, a conventional energy supplier would sell energy for 27cents per kWh, with a solar power system customers produce electricity by themselves, and just need to pay 10 cents per kWh”.

Having a cost reduction in their energy prices is the main aim of customers when deciding for using renewable energy. The amount of money for a private household when installing a photovoltaic ranges under 10,000 Euro. The manager gave an example showing the difference of electricity costs after installing a photovoltaic:

“The electricity costs within a year amounted without a photovoltaic, 1380, 00 Euro, with a photovoltaic, the household just needed to pay 610, 00 Euro. After 5 years of payback period, the household is saving up to 770,00 Euro yearly, this will continue the next 30 years”.

The 30 years comprise the lifetime of solar cells. The investment in the beginning requires costs, but then after the payback period, customers benefit up to 30 years long from lower energy costs. The manager mentioned the example of buying a house, and the reason people buy a house is to avoid paying long-life rent. The same it is buying a photovoltaic, and you would someday not need to pay money for electricity because one would produce it by oneself. This would get one, same as owning a house, benefit in the long-term and save up a large amount of money.

However, due this initial investment many people still show a resistant behavior towards the adoption of renewable energy. Due to the lack of knowledge towards renewable energy, people often forget that this initial investment pays off very fast and after that they will actually just benefit with cost savings.

Therefore, very attracting for customers currently is the governmental support. Clients are provided with grant for up to 12,300 Euro. The KfW bank for instance, grants private households with up to 2,500 Euro when deciding to install a photovoltaic.

A constraining factor towards the adoption is the optic. Especially, many women are mostly against having a photovoltaic because the roof does not look nice. But the company still tries to convince those ones with offering “black modules “ for instance, which have a more noble appearance.

Also, the technical development plays a role when deciding for renewable energy technology. Many people for instance say, “I want to wait, maybe technological development is better in two years and I might benefit from more cost reductions”. However, the technology within the photovoltaic is far developed and the cost reduction potentials are also exhausted. The company just hopes that market price for energy continues to rise so that more and more people decide for renewable energy.

On the question, whether renewable energy shall be called a luxury item or not, the manager is clearly of the opinion that a system like the photovoltaic cannot be considered as a luxury product, but more as a basic product since it is fulfilling the basic needs, providing energy, heat, and mobility. N&A offers electricity for (lighting, cooling, freezing, cooking, baking, washing, electricity devices such as the TV etc.) as well as heating for heater and warm water and mobility for car and scooter. Three areas of action: Energy production (solar energy), energy saving (saving devices) and energy use (heat pumps). All these offerings are considered as daily needs.

With the motto “Why to buy it when you can produce it by yourself”, the company tries to increase the number of its customers. The company agrees to the need of more marketing work towards the promotion of renewable energy. N&A is aware of too many people having not enough knowledge on renewable energy and what the benefits actually are when using renewable energy, which is also a reason for not being therefore an attractive solution for many people. Therefore, N&A tries to put more effort on planning information events, organizing exhibition and giving lectures more regularly. The company shows example videos of other clients in order to show how they are already benefiting from the photovoltaic. There is big effort in doing online marketing as well. For instance, Google AdWords are used in order to attract more customers. The company also organizes little so called “Baustellen-Parties”. After the company has installed the photovoltaic, they invite the entire neighborhood for a barbeque and next to that inform them about their products, with the aim that maybe someone else also gets interested. The company needs to increase the number of customers and through self-organized information events as well as exhibitions, people are tried to get educated about what photovoltaic is and how they can benefit from it.

Other than that a more influencing factor towards consumers’ choice is currently the “word of mouth”. People are more likely to listen to people within their social network. If one gives positive recommendations towards the product, the other is more likely to come to the company. The manager said that:

“The biggest influence towards the decision for the adoption of a photovoltaic system comes from positive recommendations, when the clients self - go to others and recommend us. Almost 50% to 60% of our customers came to us because they got recommended by any person within their social network”.

Of course the customer at first place asks what benefit he gets from deciding for renewable energy. However, the consumer does not decide for renewable energy due to any environmental concern. As said by the manager:

“There is no one who says, no matter what amount of money it will cost me; I want to be “green”. There are about 3% of our customers who think green; the rest is interested in making yield or having a cost advantage”.

5. ANALYSIS

This study so far found factors from the literature which influence the three aspects of consumer choice: 1.Choice alternative, 2. Conflict and 3. Cognitive processes. These include costs, information and knowledge towards renewable energy as well as governmental regulations, environmental concern, education- and marketing efforts.

The conflict arising from the existence of the alternatives such as renewable energy as a new energy source against conventional energy relates to the costs which are associated when deciding for renewable energy as well as the lack of information and knowledge towards renewable energy. The cost

for instance, as mentioned in literature has been demonstrably lower for conventional sources than renewable sources which has served as a barrier to adoption. Also the amount of information and knowledge available towards renewable energy influences consumer towards its adoption. If people have not sufficient knowledge or information towards renewable energy, they are more likely to reject it.

Factors that aim to reduce the conflict during the cognitive process are also found. These relate to governmental regulations, education efforts, environmental concern as well as marketing. At first, government intervention is expected to direct people towards the adoption of renewable energy. Secondly, putting more efforts in educating people with regard to renewable energy might influence their choice towards an adoption. The third factor relating to environmental concern assumes that consumers may go green in response to moves to tackle environmental problems. Lastly, marketing efforts in terms of the concept of 4Ps, including price, promotion, place and product influence the cognitive processes in order to overcome the conflict towards renewable energy. Since the concept of 4Ps fits according to consumers' needs and wants; it might be regarded as a way which directs people towards an adoption of renewable energy.

After conducting the interview the factors from literature have found confirmation. The cost factor and the amount of information and knowledge available towards renewable energy are still regarded as factors that influence the conflict with regard to the decision towards the adoption of renewable energy. Also, governmental regulations, efforts towards education and marketing are regarded as factors in order to reduce the conflict. The factor about environmental concern is not seen as an influencing factor. As found from the interview, consumers do not decide for renewable energy due to any environmental concern.

Through conducting the interview several new factors have been found which influence the three aspects of consumer choice. Since there is the alternative of using renewable energy instead of conventional energy, several conflicts arise which direct consumer towards an adoption or rejection of renewable energy. The factors relating to the adoption are about cost savings and energy provider independency. Through installing a photovoltaic, consumer benefit from lower energy costs up to thirty years (30 years is the expected lifetime of a photovoltaic). Also, consumers aim to be independent from energy suppliers while producing energy within their own house. Another factor relates to the market price of energy. Since energy costs are rising continually, people are confronted with high electricity costs. Therefore, people tend to decide for a photovoltaic because this solution helps them to benefit from long term energy cost reductions.

However, there are still factors that also influence consumer towards a rejection of renewable energy. Those relate to the price, technological development as well as optic. Due to the initial investment which is required to do when installing a photovoltaic for instance, many people still show a resistant behavior towards the adoption of renewable energy. Another constraining factor towards the adoption is the optic. Many women are mostly against having a photovoltaic because the roof does not look nice. Lastly, the technical development plays a role when deciding for renewable energy because many people tend to wait for a better technological development towards photovoltaic systems.

New factors that aim to reduce the conflict during the cognitive process are also found. Those relate to the availability of grants as well as recommendations from social network. Very

attracting for customers currently is the financial support. Bank for instance, grants private households with up to 2,500 Euro when deciding to install a photovoltaic. Other than that a more influencing factor towards consumers' choice is currently the "word of mouth". People are more likely to listen to people within their social network. Thus, positive recommendations from the social network direct people to adopt renewable energy.

To summarize the factors, an improved version of framework 1, see figure 2 is created.

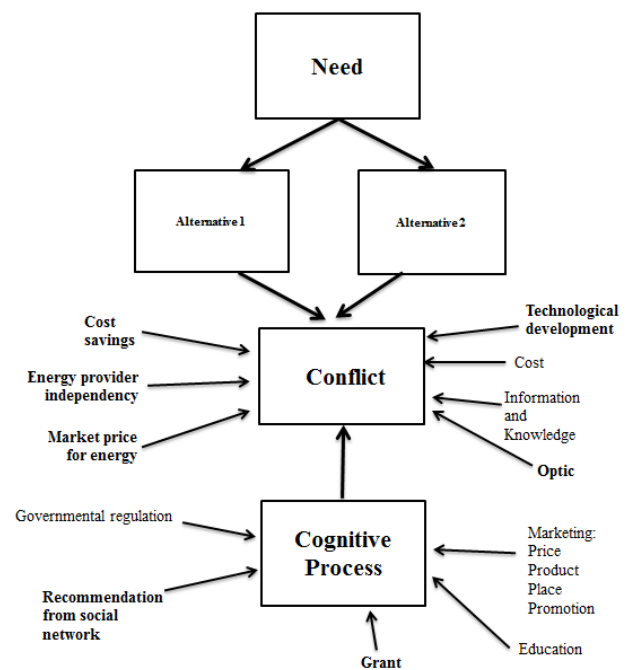


Figure 2. Improved Framework of factors influencing consumer choice towards renewable energy

6. DISCUSSION

This study extended the initial framework of influencing factors towards consumer choice developed from literature by adding factors found from practice. The factors found from literature were backed up by the post Keynesian theory and the theory of consumption values as well as the concept of 4Ps and green marketing strategies. Hereby, the conflict arising from the choice between using conventional- or renewable energy is due to two factors, the cost disadvantage as well as the lack of information and knowledge which directs many people to reject renewable energy. Considering these two factors, one could assume that those might also relate to factors influencing consumer choice towards conventional energy.

Different it is with the factors found from the interview. Those seem to be more specifically relating to the consumer choice towards renewable energy.

For instance, cost savings and energy provider independency as well as the current market price for energy steer consumer towards an adoption of renewable energy.

A contradicting opinion arises from literature and practice towards the point of price which is found in literature to be a barrier towards the adoption of renewable energy. Why does the literature report about premium prices for renewable energy, or renewable energy being within a cost disadvantage compared to energy generated from fossil or nuclear fuels or as Haas et al.

(2008) state that the cost has been demonstrably lower for conventional sources than renewable sources, whereas from the interview it is found that energy produced with a photovoltaic costs less than energy bought from a conventional energy supplier. Furthermore, consumer are benefiting from cost savings instead of being in a cost disadvantage. When talking about premium prices or higher costs of renewable sources, the literature might probably mean the initial investments needed to be taken, such as costs for the installations of a photovoltaic which are being a barrier towards the adoption for renewable energy. As the information gained from interview shows that using a photovoltaic system requires higher initial investments which is currently regarded as a factor towards the rejection of renewable energy. Thus, the assumption made within the literature review about the increased price being a barrier towards renewable energy can be confirmed.

Also, relating to the point of cost disadvantage, literature stated another reason for it due to the fact that most conventional technologies have received - and continue to do so- significant direct and indirect subsidies (Haas et al., 2008). However, as found from the interview, currently there is also the availability of financial support in terms of grants for renewable energy which appears to be very attractive for customers towards the adoption of renewable energy.

Another assumption made within the literature review related to the amount of knowledge and information towards renewable energy. As Maula et al. (2013) stated that there is limited evidence that more informed individuals are accepting renewable energy technologies. However, as found from the interview, this assumption is not true because the lack of information and knowledge of people is indeed directing people towards a rejection of renewable energy. The interviewed company stresses on to put more effort towards educating people and increasing marketing efforts in order to increase the knowledge towards this new form of energy source.

New factors found towards the rejection of renewable energy related to the technological development as well as the optic. Regarding optic it can be concluded that factors such as the appearance do play a role when making choices. This point and the point about technological development however were not reflected within the literature and provide thus new inside as influencing factors within consumer choice towards renewable energy.

Lastly, relating to the cognitive process, a last factor found from the interview have been added to the initial framework. This one relate to the recommendations from social network. People are more likely to adopt renewable energy once they get recommended on it by people within their social network. Whereas the information gained through the literature stress on the importance of marketing efforts including the adoption of the concept of 4Ps or green marketing strategies being an effective way to direct people towards the adoption of renewable energy, the power of the "word of mouth" and people taking the opinion from people of their social network is revealing to be a more influencing factor towards the consumer choice, as found from the interview.

7. CONCLUSION

The research question within this research was: What factors influence consumer choice towards renewable energy? In order to find an answer to this, a literature review based on the post Keynesian theory, the theory of consumption values, the concept of 4Ps and green marketing strategies provided factors influencing consumer choice among others the role of

governmental regulations, cost issues, knowledge and education as well as the importance of marketing. Through conducting an interview with N&A energy, a specialist for renewable energy, evidence was found on the factors from literature. Additionally, new factors have been found: The main reason behind the adoption of renewable energy is the fact that people want to reduce their energy cost. Further, factors relating to an adoption of renewable energy are energy supplier independency, increasing market price for energy, positive recommendations from people within the social network as well as financial support through grants. Additionally, factors found directing people towards a rejection are relating to the technological development and optic.

As reported from the interview renewable energy is benefiting for consumers and appears to be a valuable investment while providing cost savings and independency from energy provider. It is however important to make sure that people get more information and education towards renewable energy. Organizations need to get more active within the marketing field. Increasing awareness and interest but more important to increase the knowledge towards renewable energy, requires organizing information events, exhibitions as well as actively educating people trough lecture. As found within this research a big factor influencing consumer towards their choices are still the recommendations from people within the social network. This means organizations should put a lot of effort in satisfying existing customers, so that those go outside and talk positively about their organizations.

7.1 PRACTICAL RELEVANCE

The aim of this research work was to investigate the factors that influence the consumer choice towards renewable energy. Through the interview a more in-depth knowledge towards the influencing factors has been gained. The study finds factors which are more appropriate when looking at renewable energy specifically. Furthermore, this study extended the initial framework of factors influencing consumer choice derived from theory by adding factors influencing the three aspects of consumer choice derived from practice.

Additionally, since it is assumed that the choice of a customer is characterized by conflicts and cognitive processes, the study showed how the conflict arises and then presented suggestions in order to reduce the conflicts during cognitive processes.

In this way firms and organizations promoting renewable energy can understand in what conflicts consumer are involved and then tackle through cognitive processes in order to reduce those conflicts. This may increase the number of renewable energy adopter.

Through this study renewable energy promoter can improve their marketing strategies more effectively to reach the consumer by understanding issues such as: How consumer are influenced by governmental regulations, how consumers are influenced by recommendations from people of their social network; how lack of knowledge or information with regard to renewable energy; money investment issues and cost savings, provision of grants, influence consumer choice towards renewable energy.

Considering these factors provides organizations a better understanding of how consumers make choices and through this they can try to tackle on these factors in order to attract more customers in future. In this way organizations can stimulate the demand for renewable energy and try to maintain or increase their market share.

7.2 SCIENTIFIC RELEVANCE

This research used the Post Keynesian theory, the theory of consumption values as well as the concept of 4Ps and green marketing strategies in order to find what factors influence consumers towards their choice when deciding for the adoption or rejection of renewable energy. Through the interview, the factors found from literature have been confirmed. Several new factors have been found as well. In this way the framework of consumer choice by Hansen (1976) has been added through influencing factors towards the conflict and cognitive process, found from theory and practice. The advantage of this study is that through finding factors from the practice, the old theory based framework has been refreshed with new factors relating to the current time, such as increasing market price for energy, or the changing governmental regulations for instance which therefore provide new inside into the topic of influencing factors of consumer choice towards renewable energy.

8. LIMITATIONS AND FUTURE RESEARCH

Like any study, also this study has its limitations which need to get attention and provide guidance for future research. First of all, due to the findings from just one interview, this research cannot be generalizable for a wider population. Secondly, the interview has been conducted with a firm providing renewable energy instead of consumer themselves. As this study aimed to find what factors influenced consumer towards their choices, conducting interview with them would have provide a more valuable insight behind their choices of adopting or rejecting renewable energy. Thirdly, the findings gained from the interview relate to solar energy, thus, there might be differences for other renewable energy sources. Fourthly, relating to the factors, there is not much evidence on it whether those factors just relate to renewable energy or might also play a role towards conventional energy. Therefore, an interview with a conventional energy provider would have been helpful as well because in this way, the study could have provide a comparison towards the influencing factors towards the choices for renewable energy versus conventional energy.

For future research and in order to find more factors, it is proposed to first conduct an interview with a renewable energy provider as well as a conventional energy provider in order to get insight within the topic, but then however, based on the findings from the interview to create a survey for renewable energy users and conventional energy users in order to get information about factors for their reasons of adoption or rejection towards renewable energy. It is assumed that the empirical results would have been more suitable if data would have been collected from adopters and non-adopters of renewable energy. Through this the study would have provide with both sides of influencing factors, the adoption reasons as well as the rejection reasons.

Nevertheless, it is assumed that also from doing those surveys with renewable energy as well as conventional energy users, the findings will not differ much with regard to influencing factors towards their choices from the factors found within this study. It is more important to find ways and strategies and how renewable energy provider can improve their marketing work in order to attract more consumers in future. Many people seem to have a lack of knowledge and information towards renewable energy, therefore putting effort in educating people is more valuable for gaining market share for renewable energy.

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10. REFERENCES

1. Alanne, K., & Saari, A. (2006). Distributed energy generation and sustainable development. *Renewable and Sustainable Energy Reviews*, 10(6), 539-558. doi: <http://dx.doi.org/10.1016/j.rser.2004.11.004>
2. Arkesteijn, K., & Oerlemans, L. (2005). The early adoption of green power by Dutch households: An empirical exploration of factors influencing the early adoption of green electricity for domestic purposes. *Energy Policy*, 33(2), 183-196. doi: [http://dx.doi.org/10.1016/S0301-4215\(03\)00209-X](http://dx.doi.org/10.1016/S0301-4215(03)00209-X)
3. Babbie, E. (2013) *The Practice of Social Research*. Cengage Learning.
4. Balachandra, P., Kaundinya, D. P., & Ravindranath, N. H. (2009). Grid-connected versus stand-alone energy systems for decentralized power—A review of literature. *Renewable and Sustainable Energy Reviews*, 13(8), 2041-2050. doi: <http://dx.doi.org/10.1016/j.rser.2009.02.002>
5. Beck, F., Martinot, E.(2004). Renewable energy policies and barriers. (http://74.91.228.224/Beck_Martinot_AP.pdf).
6. Berger, P., Moore, K., Weinberg, B. (2013) Issues for Exploration of differing values among sub-groups of young adults. *International Journal of Business and social science*, 4(5)
7. Bettman, J., Luce, M., & Payne, J. (1998). Constructive Consumer Choice Processes. *Journal of Consumer Research*, 25(3), 187-217. doi: 10.1086/209535
8. Bilharz, M., & Wüstenhagen, R. (2006). Green energy market development in Germany: effective public policy and emerging customer demand. *Energy Policy*, 34(13), 1681-1696. doi: <http://dx.doi.org/10.1016/j.enpol.2004.07.013>
9. Bird, L., Wüstenhagen, R., & Aabakken, J. (2002). A review of international green power markets: recent experience, trends, and market drivers. *Renewable and Sustainable Energy Reviews*, 6(6), 513-536. doi: [http://dx.doi.org/10.1016/S1364-0321\(02\)00033-3](http://dx.doi.org/10.1016/S1364-0321(02)00033-3)
10. Blythe, J. (2006). *Principles & practice of marketing*. Cengage Learning EMEA.
11. Burton, D. (2002). Consumer education and service quality: conceptual issues and practical implications. *Journal of Services Marketing*, 16(2), 125-142. doi:10.1108/08876040210422673
12. Buttle, F. A., Solomon.(1998). Word of mouth: understanding and managing referral marketing. *Journal of Strategic Marketing*, 6(3), 241-254. doi: 10.1080/096525498346658
13. Cook, M., Faiers, A., & Neame, C. (2007). Towards a contemporary approach for understanding consumer behaviour in the context of domestic energy use. *Energy Policy*, 35(8), 4381-4390. doi: <http://dx.doi.org/10.1016/j.enpol.2007.01.003>
14. Destatis. (2014) Retrieved from <https://www.destatis.de/EN/FactsFigures/EconomicSectors/Energy/Energy.html>
15. Eddy, M.(2014). Germany Moves Forward on Renewable Energy Plan. *The New York Times*. Retrieved from http://www.nytimes.com/2014/04/09/business/international/germany-moves-forward-on-renewable-energy-plan.html?_r=0
16. Ghani, N. H. A., Sulaiman, Y., & Mat N. K. N., (2014). Constructing a Consumption Model for Malaysian Consumers. *Journal of Marketing Management (JMM)*, 2(3 & 4). doi: 10.15640/jmm.v2n3-4a4
17. Haas, R., Held, A.,Finon, D.,Haas, R.,Meyer, N., Nishio, K., Wisner, R.(2008). Promoting electricity from renewable energy sources – lessons learned from the EU, US, and Japan. *Competitive electricity markets*.
18. Hansen, F. (1976). Psychological Theories of Consumer Choice. *Journal of Consumer Research*, 3(3), 117-142. doi: 10.2307/2488898
19. Harmon, R. R., & Cowan, K. R. (2009). A multiple perspectives view of the market case for green energy. *Technological Forecasting and Social Change*, 76(1), 204-213. doi: <http://dx.doi.org/10.1016/j.techfore.2008.03.026>
20. Heinzle, S., Kaenzig, J., L., & Wüstenhagen, R. (2013). Whatever the customer wants, the customer gets? Exploring the gap between consumer preferences and default electricity products in Germany. *Energy Policy*, 53(0), 311-322. doi: <http://dx.doi.org/10.1016/j.enpol.2012.10.061>
21. Ibrahim, H., Ilinca, A., & Perron, J. (2008). Energy storage systems—Characteristics and comparisons. *Renewable and Sustainable Energy Reviews*, 12(5), 1221-1250. doi: <http://dx.doi.org/10.1016/j.rser.2007.01.023>
22. Kraeusel, J., & Möst, D. (2012). Carbon Capture and Storage on its way to large-scale deployment: Social acceptance and willingness to pay in Germany. *Energy Policy*, 49(0), 642-651. doi:<http://dx.doi.org/10.1016/j.enpol.2012.07.006>
23. Ku, H.-H., Kuo, C.-C., Wu, C.-L., & Wu, C.-Y. (2012). Communicating Green Marketing Appeals Effectively. *Journal of Advertising*, 41(4), 41-50. doi: 10.1080/00913367.2012.10672456
24. Lavoie, M. (2005). Post-Keynesian Consumer Choice Theory for the Economics of Sustainable Forest Management. In S. Kant & R. A. Berry (Eds.), *Economics, Sustainability, and Natural Resources* (Vol. 1, pp. 67-90): Springer Netherlands.
25. Lin, P.-C., & Huang, Y.-H. (2012). The influence factors on choice behavior regarding green products based on the theory of consumption values. *Journal of Cleaner Production*, 22(1), 11-18. doi: <http://dx.doi.org/10.1016/j.jclepro.2011.10.002>

26. Maula, J., E. Moula, M. M., Hamdy, M., Fang, T., Jung, N., & Lahdelma, R. (2013). Researching social acceptability of renewable energy technologies in Finland. *International Journal of Sustainable Built Environment*, 2(1), 89-98. doi: <http://dx.doi.org/10.1016/j.ijbsbe.2013.10.001>
27. Menegaki, A. N. (2012). A social marketing mix for renewable energy in Europe based on consumer stated preference surveys. *Renewable Energy*, 39(1), 30-39. doi: 10.1016/j.renene.2011.08.042
28. Menges, R. (2003). Supporting renewable energy on liberalised markets: green electricity between additionality and consumer sovereignty. *Energy Policy*, 31(7), 583-596. doi: [http://dx.doi.org/10.1016/S0301-4215\(02\)00144-1](http://dx.doi.org/10.1016/S0301-4215(02)00144-1)
29. Omer, A. M. (2008). Green energies and the environment. *Renewable and Sustainable Energy Reviews*, 12(7), 1789-1821. doi: <http://dx.doi.org/10.1016/j.rser.2006.05.009>
30. Ottman, J., Stafford, E., Hartman, C. (2006). Avoiding green marketing myopia – Ways to improve consumer appeal for environmentally preferable products. *Issue of Environment*, 48(5), p. 22-36.
31. Ozaki, R. (2011). Adopting sustainable innovation: what makes consumers sign up to green electricity? *Business Strategy and the Environment*, 20(1), 1-17. doi: 10.1002/bse.650 <http://onlinelibrary.wiley.com/doi/10.1002/bse.650/epdf>
32. Richarme, M. (2005). Consumer Decision-making models, strategies, and theories, oh my! <http://www.decisionanalyst.com/Downloads/ConsumerDecisionMaking.pdf>
33. Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). Why we buy what we buy: A theory of consumption values. *Journal of Business Research*, 22(2), 159-170. doi: [http://dx.doi.org/10.1016/0148-2963\(91\)90050-8](http://dx.doi.org/10.1016/0148-2963(91)90050-8)
34. Sovacool, B. K. (2009). The importance of comprehensiveness in renewable electricity and energy-efficiency policy. *Energy Policy*, 37(4), 1529-1541. doi: <http://dx.doi.org/10.1016/j.enpol.2008.12.016>
35. Tseng, M.-L., Wang, R., Chiu, A. S. F., Geng, Y., & Lin, Y. H. (2013). Improving performance of green innovation practices under uncertainty. *Journal of Cleaner Production*, 40(0), 71-82. doi: <http://dx.doi.org/10.1016/j.jclepro.2011.10.009>
36. Unescap. (2015). Retrieved from: <http://www.unescap.org/sites/default/files/14.%20FS-Decentralized-energy-system.pdf>
37. Wisner, R. H. (1998). Green power marketing: increasing customer demand for renewable energy. *Utilities Policy*, 7(2), 107-119. doi: [http://dx.doi.org/10.1016/S0957-1787\(98\)00005-8](http://dx.doi.org/10.1016/S0957-1787(98)00005-8) <http://www.sciencedirect.com/science/article/pii/S0957178798000058>
38. Yousefi, P., & Zand Hessami, H. (2013). Investigation of major factors influencing green purchasing behavior: Interactive approach. *European Online Journal Of Natural And Social Sciences*, 2(4), pp. 584-596. Retrieved from <http://european-science.com/eojnss/article/view/251>

APPENDIX

Interview

*Welche Faktoren beeinflussen das Konsumverhalten bei Erneubaren Energien
Allgemeine Fragen*

1. Wie heißt das Unternehmen?
2. Was macht das Unternehmen?
3. Was für ein Produkt wird angeboten?
4. Welche erneubare Enrgie nutzen Sie?
A) Bioenergie B) Erdwärme C) Wasserkraft D) Meeresenergie E) Sonnenenergie
F) Windenergie.
5. Was ist ihr Zielmarkt? (An wen verkauft ihr euer produkt? Gibt es eine bestimmte Gruppe von Leuten an denen Sie Ihr Produkt hauptsächlich richten?)
6. Versorgen Sie derzeit einen bestimmten Kunden Segement? Wenn ja, warum?
7. Die Mehrheit wird von herkömmlichen Energien versorgt, wie von den Stadtwerken Haben Sie Probleme Kunden zu gewinnen?
8. Warum entscheiden sich Kosumenten für Sie?
9. Was unterscheidet Ihnen von herkömmlichen Energie Anbietern? (Was erhält der Kunde von Ihnen was er von herkömmlichen Anbietern nicht erhält?)
10. Deckt ihr Produkt die Grundbedürfnisse Ihrer Kunden, oder ist es eher ein Luxus Artikel?
11. Was sind Ihre Werbestrategien? (Was tun Sie um mehr Kunden zu gewinnen?)

12. Wie klären Sie Menschen über erneubaren Energien/ ihr Produkt (Solarstrom, Stromspeicher, Wärmepumpen) auf?
13. Oder haben Ihre Kunden genug Wissen über Ihr Produkt, wenn Sie zu Ihnen kommen? (Wie werden denn Kunden auf Sie aufmerksam?)
14. Was erwarten/erhoffen sich Ihre Kunden wenn Sie zu Ihnen wechseln?
15. Wie viel muss investiert werden, wenn man von herkömmlicher Energie Nutzung zu erneubaren Energie Nutzung wechselt?
16. Denken Sie, dass niedrigere Preise zu einer Zunahme von Kunden führen könnte?
 - a) Ja
 - b) Nein
17. Besteht überhaupt die Möglichkeit für Sie niedrigere Preise für Ihre Produkte zu verlangen?
18. Denken Sie dass staatlich angeführte Regelungen dazu führen könnte dass die Anzahl Ihrer Kunden ansteigt/ sinkt?(lassen sich Menschen von Politischen Regelungen beeinflussen?)
 - a) Ja
 - b) Nein
19. Wie hat sich Ihre Situation nach dem EEG Beschluss in 2014 geändert? (Ist die Anzahl der Kunden
 - a) angestiegen
 - b) gesunken
20. Welche Faktoren denken Sie beeinflussen die Entscheidung der Konsumenten gegenüber erneubaren Energien/ ihr Produkt?

English translation

Interview on factors influencing consumer choice towards renewable energy

1. What is the name of the organization?
2. What does the organization do?
3. What product do you provide?
4. Which renewable technologies do you work with?
A) Bio B) geothermal energy C) hydropower D) Ocean energy E) Solar F) Wind
5. What is your target market?
6. Do you supply a specific customer segment?
7. The majority is supplied with conventional energy for instance by the Stadtwerke, do you have problems with attracting more customers?
8. Why do consumers choose you?
9. What does differentiate you from conventional energy provider?
10. Does your product fulfills the basic needs of customers or is it a luxury item?
11. What are your promotional strategies? (What are you doing to increase the consumption of your product?)
12. How do you educate people on renewable energy/ on your product?
13. Or are your customers having already enough knowledge when they come to you?
14. What do your consumers expect from you when they switch to you/ or when they decide for your product?
15. How much customers need to invest when using your product?
16. Do you think lower prices would increase the number of customers for you?
Yes
No
17. Is there the chance for you to set lower prices?
Yes
No
Why?
18. Do you think governmental regulations can increase the number of customers?
Yes
No
19. How did your situation changed after EEG in 2014? (Did the number of customer increased for you?)
increased
decreased
20. What influences consumer choice towards renewable energy/ your product?

