Applying Frugal Innovation to Serve the Bottom of the Pyramid in Germany

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Spring semester 2017
Master thesis, two-year, 30 hp
Abstract
In times of scarce resources, frugal innovation can be a driving engine for growth and market success, as it is a practical concept established in developing countries. Nonetheless, the available literature also emphasizes a potential importance for Western countries. Accordingly, our thesis and research add to the lack of literature that connects frugal innovation to developed countries and its specific underlying conditions. The review of available literature and further discussions led to the following research questions:

1. What is the current application status of frugal innovation in Germany?
2. What characteristics should frugal innovations have to serve the BoP in the context of the German market?

A preliminary theoretical framework was created from the relevant literature streams stressing the fragmented nature of frugal innovation. As the concept and research addressing this issue are in a nascent stage, one unifying definition was not found. For the course of this thesis, the definition of frugal innovation was therefore chosen to be "thrifty, modest and affordable innovations, valuable for BoP customers". One major derivation from the literature review is that frugal innovation can be of major importance in developed countries, not only for customers for getting access to certain products, but also for companies addressing untapped markets.

The empirical investigation and explorative data collection was undertaken within the market context of Germany based on eight companies from different industry backgrounds. Therefore, interviews were held with representatives of companies that offer frugal products (thereafter also including services) according to the definition from above. Within the scope of the grounded theory analyzation techniques, the interviews supported our aim to gain rich and meaningful data to extend the substantive theory about the concept of frugal innovation.

Our study results (based on our eight interviews) prove the existence of frugal products in the German market, while the term and the concept have previously been unknown. Even though frugal innovations were still to be confirmed, they were not labeled as such to connect them to the concept. The study also indicates the existence of a bottom of a pyramid in Germany, despite its original connection to emerging market population. Our findings resulted in a revised framework that connects relevant fragments to a logical comprehension of the concept of frugal innovation. Finally, characteristics for frugal products and requirements could be validated and improved to be economically successful in developed market contexts.

The major contribution of our thesis is its general investigation of a rather unknown concept and its presence in other markets than originally laid down. The thorough literature review, the creation and revision of the framework and our study results will serve as a fruitful ground for further exploration of this innovation type.

Keywords: Frugal innovation, (social) entrepreneurship, emerging market innovation, frugal product criteria, bottom of the pyramid, developed countries, value creation
Acknowledgments

We would like to take the opportunity to thank and appreciate the support that we received by numerous people during the course of writing our thesis. We acknowledge the encouragement throughout the whole process from idea generation to transformation into this scientific paper.

First, we thank our supervisor, associate professor Zsuzsanna Vincze for her valuable feedback and support during the WIP seminars and the more spontaneous meetings in her office. Zsuzsanna assisted with favorable hints for improving our thesis not only in terms of providing further literature but also with valuable and constructive feedback.

We also thank all study participants from various firms that participated in our thesis. Their effort to collaborate was necessary to further develop this exciting topic of frugal innovation which would not have been possible without their insightful responses.

Lastly, we do not want to miss the chance to thank our families, friends and colleagues for the continuous support throughout the demanding process of finishing this thesis. Their encouragement helped us to stay focused and to have the strength to continue. We also like to thank one another as thesis partners for the collaboration, many fruitful discussions and the mutual support to work on our thesis in a professional and efficient manner.

THANK YOU!
Umeå, May 2017
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<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>BoP</td>
<td>Bottom of the Pyramid</td>
</tr>
<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>FI</td>
<td>Frugal Innovation</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GT</td>
<td>Grounded Theory</td>
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<tr>
<td>HDI</td>
<td>Human Development Index</td>
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<td>LPI</td>
<td>Logistics Performance Index</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research &amp; Development</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
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1. Introduction

In order to present the motivation for our chosen topic, the first chapter is concerned with practical and theoretical problems in the global business environment. The explanations will highlight the importance of research in the field of frugal innovation (FI), especially in the context of developed markets. The problem background consists of the current and the potential state of research, and serves as a foundation for the identification of the research gap. We will then provide the research questions, the purpose of the study, the expected contributions in terms of knowledge, society and practice. A brief description of the key concepts of the thesis will be accompanied throughout the course of this thesis.

1.1. Choice of Subject and Problem Background

Thrifty, modest and affordable. In times of limited resources, the phenomenon of financial and natural resource constraints calls for innovative solutions to counterfeit these circumstances. One concept that presently gains importance is frugal innovation as a fairly new innovation type. FI is a concept that consists of two different elements, namely innovation and frugality and combines the creation of valuable ideas (Tidd & Bessant, 2014, p. 3) with criteria of thriftiness, modesty and resource-constraints as laid down in the mid-sixteenth century term ‘frugalis’ (frūgālis) (Soni & Krishnan, 2014, p. 31; Roiland, 2016, p. 575; Tiwari, Kalogerakis & Herstatt, 2016, p. 2). Generally, the term ‘frugal innovation’ refers to products and services that are consistently developed and optimized for their core functions (Agnihotri, 2015, p. 401). This approach enables lower retail prices for products while at the same time provides economic-driven opportunities through previously limitedly served target groups (Pitta et al., 2008, p. 399; Pansera, 2013, p. 470; Knorringa et al., 2016, p. 144).

For further understanding and contribution to our thesis, it is important to agree on a definition of FI. Thus, we created a working definition for our thesis and believe this definition to be applicable for further research studies. Hence, based on available literature we define the concept of frugal innovation in regard of the bottom of they pyramid (BoP) as "thrifty, modest and affordable innovations, valuable for BoP customers" (Agnihotri, 2015, p. 401; Angot & Plé, 2015, p. 4; Hossain et al., 2016, p. 132; Center for Frugal Innovation, n.d.). As it will become clear over the course of our thesis, the novelty of the concept also applies in terms of the determination of characteristics to justify FI to be legitimately labeled as such. Accordingly, seven characteristics were found in the prevailing literature and will serve as a starting point for further analysis of the concept in our thesis. These characteristics are core functionality, performance level, usage-centered, ruggedization, cost reduction, no-frills strategy and environmental issues (Kuo, 2014, p. 4; Basu, Banerjee & Sweeney, 2013, p. 65-66; Kuo, 2016, p. 3; Rao, 2013, p. 67; Weyrauch & Herstatt, 2016, p. 6-7; Angot & Plé, 2015, p. 4; Sinha, 2013, p. 71; Khan, 2016, p. 8).

In accordance to its rather ancient meaning (Tiwari, Fischer & Kalogerakis, 2016, p. 8; Soni & Krishnan, 2014, p. 31), frugal innovation is not a totally new conception. Yet, new is the impetuosity that FI is discussed in terms of product and service innovations in both developed and developing countries. The concept of frugal innovation leads back to changes linked to population and economic growth in emerging countries such as China and India. These markets are becoming more and more established as lead markets for frugal innovation, that are defined by large population groups living below the poverty line, which make them favorable customers for FI (Prahalad, 2005). Even
though the rapid economic growth in these countries has fostered the emergence of a new middle class which is interested in affordable and simple technology solutions and products (Karnani, 2009, p. 7), the concept of FI is solely connected to the poorest citizens within emerging markets. Furthermore, most of the definitions on the term ‘frugal innovation’ do not refer to a specific market, i.e. emerging countries. Nonetheless, the available literature predominantly applies FI to emerging markets, where according to Prahalad (2005, p. 4), the world’s poorest live. In this respect, Ernst & Young (2011) conducted a survey in context of emerging markets, interviewing 547 executives to obtain an insight on how they think about frugal innovation. Surprisingly, most of the respondents (75%) see FI as an eminent opportunity and up to 81% agree this concept having as much importance in developed countries as it has in developing countries (Ernst & Young, 2011). When asked if the top managers are already involved in FI, one third verified their involvement and the benefits they get from applying the concept which led to additional 40% of the respondents to want to engage in this type of innovation in the future (Ernst & Young, 2011). These numbers clearly show managerial interest in the concept. Yet, in terms of critical reflection, this survey targets towards both low and middle class customers, and not solely people from the BoP, which adds on the criticism about the BoP market potential put forward by Karnani (2009).

Yet, the assumption of the application of FI only in developing markets could not be justified through literature search, as they often refer to low and middle class customers (Karnani, 2009, p. 7). Moreover, the demographic changes and the economic crisis of 2008 that mostly affected Europe and the USA also changed income-situations in developed countries, leading to increased demand of ‘good enough’ and affordable products (Radjou & Prabhu, 2013; Le Bas, 2016b, p. 20; Rao, 2013, p. 65; Zeschky, Widenmayer & Gassmann, 2014, p. 257; Angot & Plé, 2015, p. 13; Knorringa et al., 2016, p. 144). Hence, because of changed external factors in developed countries, the concept of FI gains importance to be applied in those markets as well. Constant changes in value perceptions within the society lead to the desire of products with only core functionalities that last long in terms of usability and design and that do not cause major problems for humans or the environment (Le Bas, 2016b, p. 16; Levänen et al., 2015, p. 6; Hossain, Simula & Halme, 2016, p. 133; Simula, Hossain & Halme, 2015, p. 1567). These transformations present major challenges for companies in the developed world that have predominantly and strategically focused on high quality products ignoring actual need-oriented product and service solutions for lower income market segments (Herstatt & Tiwari, 2015, p. 2).

Based on the previous statements, we identified Germany as representative of developed countries with potential relevance for this innovation type. Our evaluation is based on the following numbers: 13.56 million people fall under the poverty threshold in Germany, who must manage life with less than €987.67 (after tax) per month (Eurostat Press Release, 2015; Federal Office of Statistics, 2016). That number correlates to 16.7% of the overall population in Germany (Eurostat, 2016). Looking at the average living costs for people who are situated in the lowest income class, the Federal Office of Statistics (2015) provides the information that people are spending a minimum of €985 per month. Hence, we can evaluate that people that fall under this category are barely covering their expenses and there is no room for further advanced consumption. Considering, that people from the bottom of the pyramid of emerging countries (interchangeably used with ‘developing countries’ in this thesis) have a combined
purchasing power of $5 trillion (Prahalad, 2005; Hammond et al., 2007, p. 9), poor people from Western countries are fewer but have more money to spend. While consensus on the actual market potential of BoP markets cannot be found, bottom of the pyramid markets in emerging countries are still seen as profitable markets (Karnani, 2007, p. 91; Pitta, Guesalaga & Marshall, 2008, p. 395; Anderson & Billou, 2007, p. 14). This could also result in the recognition of a neglected, albeit economically relevant market in Western countries to develop products and services to serve the poor, i.e. their specific bottom of the pyramid.

Additionally, social inclusion and economic driven opportunities are a means for firms to reach potential customers that have previously not been addressed properly, e.g. bottom of the pyramid in developed markets (Simula et al., 2015, p. 3; Khan, 2016, p. 1). The aspect of social inclusion especially needs to be addressed in times when the gap between rich and poor is steadily increasing (Keeley, 2015, p. 11). However, evidence was found that the concept of frugal innovation can even be applied to developed markets that themselves have their own threshold for poverty and thus their own bottom of the pyramid that needs to be considered (Soni & Krishnan, 2014, p. 31; Hossain et al., 2016, p. 132). In this way, FI not only stimulate growth and innovation impulses in emerging countries, but increasingly also in the industrialized countries by addressing markets that are not adequately served. We therefore acknowledge the positive effects of frugal innovation on the society at large (Rao, 2013, p. 70; Horn & Brem, 2013, p. 944).

1.2. Research Gap

The pioneering nature of the concept of frugal innovation and its one-sided occurrence mostly in the emerging markets requires a further extension of the concept to other contexts to give additional insights and adds to the knowledge about the concept. Even though several authors acknowledge frugal innovations being of particular interest for developed and emerging countries likewise, the focus was always on the latter one (Le Bas, 2016a, p. 10; Weyrauch & Herstatt, 2016, p. 10; Khan 2016, p. 5). Furthermore, an approach of serving the poor in developed markets has not yet been equally researched. Thus, the emphasis of this thesis is the analysis of FI and its current application status in Germany. Additionally, we would like to examine the need to adapt product characteristics incorporated in the original FI concept to fit the specific needs of the BoP in Germany.

The following figure illustrates our identified research gap. All elements will be explained in more detail in our literature review. While the traditional view of innovation refers to a top-down approach, i.e. development and sales in developed markets with adaptation and market introduction to developing countries, reverse innovation works the other way around (Tiwari & Herstatt, 2012, p. 253; Pansera, 2013, p. 473; Govindarajan & Ramamurti, 2011, p. 192; Hossain et al., 2016, p. 133). As depicted in the figure the research gap can be found in the connection between developed countries and the concept of FI. Thus, our research gap is the extension of the frugal innovation concept to developed countries, i.e. in our case, Germany.
1.3. Research Question

On the basis on the discussed problem background and the identified research gap regarding frugal innovation (are products and/or services as outcome of frugal innovation), the following research questions aim to explore the state of application in developed countries (Germany as representative) and focus on the product characteristics:

1. What is the current application status of frugal innovation in Germany?
2. What characteristics should frugal innovations have to serve the BoP in the context of the German market?

As the first research question incorporates the notion of ‘application status’, we feel an additional explanation of the focal point of this question should be mentioned. As we had difficulties to formulate the first question, that will solely investigate whether the concept of FI is currently under use in the German market context, we decided to use ‘application status’ to enable us to analyze this issue. The word ‘status’ will be used interchangeably with ‘state’ throughout the thesis, as both words technically mean the same in our case. Both words and the logical connection to ‘application’, deal with the overall assessment of the presence. This question therefore serves as the initial evaluation of the concept of FI. We assume that there is a continuum ranging from one side on which the concept of FI is not known or not in company’s focus to the other side where companies already apply the concept to serve the BoP and earn money. The purpose of the first question is therefore to assess where the interviewed companies range on this continuum and to evaluate the current state of the concept in Germany based on the companies we analyzed.

Furthermore, the second research questions aims to answer if the identified characteristics of frugal innovation from emerging markets need to be adapted to be implemented into the different market context Germany. This is necessary, as we assume that German customers have different needs than people from developing countries.
1.4. Purpose
The main purpose of our research study in following an exploratory research approach is divided into two aims that explore the state of frugal innovation in Germany under previously insufficiently addressed literature regarding the FI concept. These goals are: (1) to analyze the general application state of FI in Germany as representative of developed countries while we consider the economic potential inherent with the goal of serving the bottom of the pyramid (Knorringa et al., 2016, p. 144; Pansera, 2013, p. 470; Pitta et al., 2008, p. 399; Hall, 2014, p. 266; Khan, 2016, p. 1); and (2) to either confirm, adapt or add further previously unknown criteria for frugal innovation that are justified by the specific market conditions.

The purpose will be addressed from the firm perspective to include the element of economic potential for firms in offering frugal innovation. We decided to not take the customer perspective since we wanted to concentrate on the just mentioned element and not address several more concepts (for instance consumer behavior, marketing, market analysis, etc.) that would be necessary when considering this view. Additionally, we would like to illustrate and answer our research questions based on a framework that will be revised according to our research results that stem from qualitative data.

1.5. Expected Contributions

Knowledge Contribution to Existing Research
The applicability and importance of FI for certain customer segments in developed countries has been neglected for long (Hossain et al., 2016, p. 134; Soni & Krishnan, 2014, p. 31). This circumstance is the foundation for our identified research gap by adding knowledge in reference to extending an established concept to a new environment.

Another contribution is based on the fact that one common definition of the term ‘frugal innovation’ is not available, rather many different ambiguous definitions can be found. We would like to align varied assumptions on the FI concept to increase the comprehensiveness of the term (Weyrauch & Herstatt, 2016, p. 1; Hossain et al., 2016, p. 133; Brem & Ivens, 2013, p. 36; Pansera, 2013, p. 470). We therefore expect our definition of frugal innovation to be a contribution itself based on the following literature review. Additionally, we will contribute a framework derived from the literature about FI employed into the context of developed countries, i.e. Germany. Moreover, we will not solely aim for filling the gap in terms of general extension of the concept in Western countries, but we will also investigate which characteristics frugal products should have to increase the probability of market success (Basu et al., 2013, p. 65-66; Kuo, 2016, p. 3; Rao, 2013, p. 67; Angot & Plé, 2015, p. 4; Sinha, 2013, p. 71).

While we identified characteristics of FI applied in emerging markets, we would like to probe if they get approved, rejected or adapted to be applied in developed markets. For clarification and to avoid confusion, we need to mention, that ‘frugal product’ also refers to services and vice versa.

Practical Contributions
In terms of practical contributions, we will identify and define the bottom of the pyramid for the German market, i.e. previously insufficiently served customer groups. We also contribute to an increased awareness of FI for developed countries and resulting advantages like new market potential. From a practical perspective, this study provides new knowledge contributions and therefore becomes relevant to the field of
business administration to see the BoP as valuable business opportunity. Furthermore, governments, entrepreneurs, big corporations and institutions in general can benefit from this research, as it delves deeper into the FI concept through analysis of the status quo of FI and the quantification of the bottom of the pyramid market. These four single considerations will practically benefit firms and researchers engaging in the field of frugal innovation through better understanding of the concept and its specific market conditions.

In the existing literature, we also found evidence that frugal innovation fosters development in terms of social, economic and environmental issues (Elkington, 1999, p. 397; Giddings, Hopwood & O’brien, 2002, p. 187). Following the assumptions from several authors, the social determinant has not yet been equally researched in the same depth as the other two pillars, i.e. economic and environmental (Khan, 2016, p. 8; Missimer, 2013, p. 16; Dempsey et al., 2011, p. 289; Belz & Binder, 2015, p. 2). However, the social perspective is not our primary focus in this study and is therefore not explicitly addressed through a dedicated research question. Adding to that, our personal interests led us to the economic perspective rather than social or ecological considerations in terms of FI and still relates our findings to a bigger picture.

As it will be explicitly described later, we will apply the analyzation techniques of GT accordingly, originally laid down by Glaser & Strauss in 1967. It has been mentioned already that we generally evaluate the state of an occurring concept, i.e. frugal innovation, in another context. However, this approach would per se not justify grounded theory methods as this by design supposedly contribute to research through inductively derived substantive theory through describing the ‘what is’ instead of testing a certain hypothesis or theory (Strauss & Corbin, 1990, p. 67; Collis & Hussey, 2014, p. 341). Yet, the underlying idea of this thesis is to extend a substantive theory on basis of the investigation of a supposedly established concept, containing clear descriptions and requirements for frugal-innovative products to be successful in this environment. We confess that the original concept of FI is the prevailing influence for us in conducting research and would appear to the reader rather as testing than theory extension. However, the concept itself shall not be applied and tested towards its original assumptions just to be confirmed or disproved. We, on the contrary, aim to advance the concept to a different market context, to investigate assorted characteristics of this innovation type based on market specifics, and to finally derive a theory extension about frugal innovation in previously unconnected environments. The answer to the critical question of how grounded theory and its inherent methodology can support us to answer the research questions is therefore: We believe the strict and rigid analyzation procedures of GT to enable us to picture and explore the concept of FI in Germany based on the eight conducted interviews in the best possible way.

Furthermore, we believe qualitative data in an explorative research environment to generate results and extend the FI theory based on our interviews. This admittedly ‘small scale’ of analysis and study could serve as pre-study for further and deeper analysis in the future. Future research might use more quantitative methods like surveys, which we were not able to apply in our research due to the alleged novelty of the concept in developed countries that need to be explored in a qualitative manner before.
1.6. Key Concepts

**Innovation:** The process of creating value from new ideas in terms of developing a novel product and/or service (Piperopoulos, 2012, p. 7; Johannessen, Olsen & Lumpkin, 2001, p. 21; Tidd & Bessant, 2014, p. 3).

**Frugality:** “Degree to which consumers are both restrained in acquiring and in resourcefully using economic goods and services to achieve longer-term goals (Lastovicka et al., 1999, p. 88)".

**Frugal Innovation:** "Thrifty, modest and affordable innovations, valuable for BoP customers" (Agnihotri, 2015, p. 401; Angot & Plé, 2015, p. 4; Hossain et al., 2016, p. 132; Center for Frugal Innovation, n.d.).

**Developed Countries:** “There is no established convention for the designation of ‘developed’ and ‘developing’ countries or areas in the United Nations system. In common practice, Japan in Asia, Canada and the United States in northern America, Australia and New Zealand in Oceania, and Europe are considered ‘developed’ regions or areas (UNSD, 2016)”. Yet, the Human Development Index (HDI), issued by the United Nations Development Program, comprises of considerations regarding income, health care system and education in a country, and is therefore the most relevant indicator for the state of development of a country (UNDP, 2015). Reaching very high scores, i.e. 0.800 or higher, is the indicator to be considered as developed country.

**Bottom of the Pyramid:** Bottom of the pyramid (BoP) generally refers to Prahalad (2005), who introduced unconventional methods to improve social life of around four billion poorest people in the world that have to live with less than $2 a day (Prahalad, 2005, p. 3). We advanced this concept to the circumstances in Germany, as a developed country and created an illustrated BoP for Germany, demonstrating the third tier, representing the BoP that has to manage below the poverty line of €11840 per year (Federal Office of Statistics, 2016), which means €986.67 per month or €32.44 per day.

1.7. Outline of the Thesis

**Chapter 1: Introduction** – The introduction raises the awareness for the subject in general, while it describes our theoretical and practical point of departure. Thus, it serves as motivational discussion including the choice of the subject. The introductory section also covers the current state of available research, the identified research gap that together lead to the research questions as means to contribute to the discussion about FI.

**Chapter 2: Theoretical Framework** – The second chapter reviews and critically reflects upon the relevant and related literature streams available regarding the concept of FI. As the concepts are often ambiguous, we determine working definitions, expressing our perceptions in this field of interest. The chapter starts with reviewing literature on innovation and frugality, followed by the combined concept of frugal innovation and identified characteristics from the emerging market. Additionally, the social importance, economic opportunities and challenges incorporated in the concept are evaluated. Afterwards, we shed light on determinants of developed markets in the view of acting as core of the research. Ending with defining the BoP in Germany as important consideration for FI. Resulting from the literature review, we developed a framework that illustrates the connected concepts as well as the aim of the study.
Chapter 3: Scientific Methodology – The methodology chapter represents our chosen philosophical stances, accompanied with descriptions of the research approach and design. We will also elaborate how the data collection will be conducted in reference to the interview design.

Chapter 4: Practical Methodology – The practical methodology chapter covers more practical insights in terms of our actions regarding data collection, such as company selection criteria and interview guide. The latter part of the chapter is concerned with quality criteria, description of the transcription process and ethical considerations.

Chapter 5: Empirical Findings – This chapter focusses on the presentation of the collected data, following the structure of the interview guide. We start by giving brief introduction of the interviewed companies while presenting study results through quotations and illustrative tables.

Chapter 6: Analysis and Discussion – This chapter will go into depth on if and how frugal innovation can be applied in Germany as the example ambassador for developed countries. The aim is to analyze the empirical findings to find further insights of the concept to enhance the original conceptual framework and find new contributions when investigated for the German BoP.

Chapter 7: Conclusion – The conclusion chapter deals as final chapter to explicitly answer the stated research questions and how the study fulfilled the study purpose. Contributions to the existing knowledge are discussed alongside limitations in this thesis and suggestions for future research.
2. Theoretical Framework and Literature Review

We have divided our literature review into three parts, aiming to develop a framework as the foundation for our research in line with our purpose and research questions. We will start from a rather general perspective of integrating entrepreneurship as precursor for innovation with different views on innovation and frugality, then narrowing it down to the novel concept of FI. We therefore critically review available literature on each of these singular concepts and discuss them in the first two sections. As consensus on the definitions cannot be found in the academic literature, we discuss several definitions from different authors and then proceed with our working definitions. Hence, the first part serves to shed light on the different concepts that will be combined to understand frugal innovation next. We then pursue to integrate the context of developed countries to highlight the connection and possible relevance of frugal innovation in these countries. As a last step, we introduce our theoretical framework that will serve as a starting point in our research project.

For the better understanding of the thesis, we present our framework in illustrated form at this point. The single elements and concepts will be explained consecutively in the following sections.

Figure 2. Framework of frugal innovations in context of developed countries

2.1. Frugal Innovation

This part is separated into three sections. The first sheds light on entrepreneurship, serving as a foundation to proceed with single definitions of innovation and frugality as second and third section. Both terms, innovation and frugality serve as antecedents for frugal innovation which is, in fact, the core of our thesis.

2.1.1. Entrepreneurship as Precursor for Innovation

As one of the first, Schumpeter identified an entrepreneur as an entity worth of studying and created a description of entrepreneurs being individuals that come up and carry out new combinations of means of production that in turn are fundamental for economic growth (Carland et al., 1984, p. 354). Furthermore, he believed entrepreneurial endeavor being the central trait of innovation and being entrepreneurial can only be achieved by operating innovatively (Carland et al., 1984, p. 355). Another contribution to the literature stems from Shane & Venkataraman (2000, p. 223), mentioning two other
requirements to be labeled as an entrepreneur: recognition of opportunities and risk taking. Adding to that, Ardichvili, Cardozo & Ray (2003, p. 106) emphasize the importance of the ability to recognize opportunities that create and deliver value and constitute for a process that starts with opportunity development, opportunity recognition and ends with opportunity evaluation (Ardichvili et al., 2003, p. 109-111). Also, Carland et al. (1984, p. 356) add their perspective which can be amounted for calculated risk taking as one of the main traits an entrepreneur should exhibit to be able to confront challenges. To summarize, an entrepreneur should embody the abilities to recognize opportunities, risk taking as well as developing new ideas to create and deliver value.

Figure 3 highlights our perception of an entrepreneur acting out of individual motivation to recognize ideas and create and deliver value from them, independent of the firm’s maturity and size. The traditional view and reputation of entrepreneurship and its outcomes have been categorized to mostly economic growth, technological innovation, increased productivity or job creation (Parrish, 2010, p. 511). Though, entrepreneurs can differ in their motivation to create value (Patzelt & Shepherd, 2011, p. 640). For instance, entrepreneurial motivation can either be opportunity-driven (profitability driven) by profitability or sustainability-driven, that derives from personal motivation apart from profit in the form of improved human well-being or other sustainable goals, e.g. ecological goals (Parrish, 2010, p. 510-511). Since the aim of our study is the identification of the state of FI for the BoP in Germany, entrepreneurial motivation in recognizing the BoP as valuable and profitable market is likely to be profitability-driven. This perspective can also be seen in the presented preliminary framework that illustrates the objective of our thesis and is based on our personal interest.

2.1.2. Innovation
The phenomenon of globalization has brought our society and business environment a variety of opportunities but also pressures (Gorodnichenko, Svejnar & Terrell, 2010, p. 194). Nowadays, firms must consider a broad diversity of factors that impair their line of business controlled by conditions such as the elimination of borders that facilitate easier market entries and thus, intensifies competition (Trott, 2012, p. 5). Albeit, they must constantly adapt and evolve to be able to stay in business under the appearance and alteration of societal changes and intense technological breakthroughs (Louçã, 2014, p. 1442). On these grounds, the importance and interest in innovation has risen in recent years, as the marketplace becomes more erratic because of technological change and firms need to tackle the challenge to adapt to customer’s demand and changing lifestyles in recognizing new opportunities (Baregheh, Rowley & Sambrook, 2009, p. 1323).
It has long been argued that innovation is the engine of growth (Trott, 2012, p. 6; Sinha, 2013, p. 70). Investigating the meaning of innovation, the term stems from the Latin word ‘innovare’ and implies a change or something is about to change (Tidd & Bessant, 2014, p. 3). Additionally, the concept of innovation can be traced back to Schumpeter as the founder (Andersen, 2011, p. 11), who established a general meaning as well as engaged with the topic of economic growth and new product development being the crucial factors (Trott, 2012, p. 6). Schumpeter stressed innovations (‘creative destruction’), instead of competition, to be the dominant force in economically transforming societies (Schumpeter, 1976, p. 83; Kuo, 2014, p. 54; Knorringa, 2016, p. 146). Furthermore, innovations are considered as a means to achieve economic growth, creating value for customers, hence increasing a firm’s’ competitiveness (Schumpeter, 1976, p. 83; Kuo, 2014, p. 54; Knorringa, 2016, p. 146).

Additionally, the answer to the question of what creates innovation refers back to entrepreneurs, who initiate the creative destruction process. By being aware of market imperfections and opportunities, entrepreneurs have the ability to take advantage of them due to superior information in terms of needs, actors and resources (Landström, Harirchi & Åström, 2012, p. 1155). Since authors have started a thorough research, there have been many more contributions and different employments as well as overlaps to the literature which led to a perplexing jungle of innovation definitions that are similar yet diverse (Galindo & Mendez-Picazo, 2013, p. 501; Baregheh et al., 2009, p. 1324; Cooper, 1998, p. 493). For instance, Baregheh et al. (2009, p. 1334) assess innovation as a ‘multi stage process’ whilst Thompson’s’ definition of the term requires a presupposition of change (Thompson, 1965, p. 2). Looking at other authors, Tidd & Bessant (2014, p. 3), they rather see innovation as a transformation, to create value from new ideas. Important to consider in this regard is what innovation is supposed to change, transform, process or renew. Hence, innovations that create value can appear in different forms like products, processes or services (Baregheh et al., 2009, p. 1334; Thompson, 1965, p. 2; Tidd & Bessant, 2014, p. 5). Consequently, there is not ‘one’ consistent definition of innovation but different directions that can be perceived as value creation. For instance, Piperopoulos’ (2012, p. 7) definition of innovation, can also take the form of processes, marketing methods, business practices or even external relations but he stresses the importance of newness or new creations. The aspect of newness in terms of innovation is also seen by Van De Ven (1986, p. 591), who identifies ‘newness’ as a significant factor for the creation of innovation. Also, Johannessen et al. (2001, p. 21) categorize innovation for value creation into innovative activities in the form of new products and/or services, new methods of production, opening new markets, new sources of supply and new ways of organizing.

To summarize and to proceed and diminish the disorder of innovation definitions, a working definition for innovation is obligatory. Since the perspectives of Piperopoulos (2012) and Johannessen et al. (2001) consider all kinds of components belonging to innovation, we decided to keep a simple and explicit definition to not add to the multiplicity of definitions available in literature. Thus, we define innovation as “the process of creating value from new ideas in terms of developing a novel product and/or service”. To get an overview and a better understanding over the most different definitions evaluated in terms of innovation, a table is presented in the following.
Table 1. Definitions of innovation found in literature

<table>
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<th>Source</th>
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<tr>
<td>Thompson (1965, p. 2)</td>
<td>“By innovation is meant the generation, acceptance, and implementation of new ideas, processes, products or services. Innovation therefore implies the capacity to change or adapt.”</td>
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<td>Baregheh et al. (2009, p. 1334)</td>
<td>“Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.”</td>
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<tr>
<td>Piperopoulos (2012, p. 7)</td>
<td>“Innovation is the implementation of a new or significantly improved product, or process, a new marketing method, or new organizational method in business practices, workplace organization or external relations”</td>
</tr>
<tr>
<td>Tidd &amp; Bessant (2014, p. 3)</td>
<td>“The process of creating value from ideas”</td>
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Organizations develop necessary abilities in the form of how they manage their resources over time and develop other capabilities that have a strong impact on their individual innovation performance (Trott, 2012, p. 9). According to Tidd & Bessant (2014, p. 12), the need to manage innovation results from the perspective that innovation is a sequence of planned experimentation instead of a random process. Latter one specifically refers to the Darwinian idea of survival of the fittest, which would be the counterpart of structured and planned innovation approaches (Tidd & Bessant, 2014, p. 12). The innovation process can be divided into a consecutive layer of three steps, creating new ideas as potential technologies in the form of inventions, followed by the innovation that does not only apply but commercializes new ideas or technologies and ends with the diffusion of technologies and implementation of ideas (Arthur, 2005, p. 274). However, innovation does not happen in a vacuum, there are five established innovation processes that require at least two properties to be able to occur (Garcia & Calantone, 2002, p. 110). These innovation processes are known to be of radical nature, incremental, new, discontinuous or of imitative character (Garcia & Calantone, 2002, p. 110).

But what does it mean to innovate and what is the basis to be able to innovate in general? Many firms face different start conditions before beginning to innovate since the factors that need to be considered are different amongst concerning markets, clients, technologies, environment and value chains. Thus, the ecosystem of the firm is a crucial factor as there is no one size fits all approach (Salerno et al., 2014, p. 62). Exemplifying, Salerno et al. (2014, p. 63) go into detail about approaches for different process steps for firms that innovate. Accordingly, there is the traditional process that functions from idea to launch or a tailor-made approach or even a waiting for the market projection (Salerno et al., 2014, p. 63).

To visualize different types of innovation, one can distinguish between the novelty of an innovation as well as the impact an innovation has. Earlier, when we tried to define innovation, we introduced different implications of innovation, one of them being ‘newness’ (see 2.1.2.). Thus, in regard of the implication ‘newness’ it needs to be defined to what extent the innovation is new and to whom (Varis & Littunen, 2010, p. 130). Also, Amara & Landry (2005) emphasize the importance of innovation based on their degree of novelty. Relating to this question, Organisation for Economic Co-
operation and Development (henceforth OECD) has provided a guideline for innovation studies in the international context, which we would like to use to explain the different degrees of novelty of innovations. We have taken this step to categorize our interviewees in terms of their degree of innovativeness.

According to OECD (2005, p. 57), there are three degrees of novelty, (1) new to the firm, (2) new to the market, (3) new to the world. Firms that are innovative comprise at least one degree of novelty in their firm for them to be called innovative. Explaining the types from above, a process, product or even marketing method that is new to a firm illustrates an innovation even though it is possible that these factors have been known and applied by other firms already (OECD, 2005, p. 57). The second degree of novelty is when an innovation is newly introduced to a market while the third element, i.e. new to the world, has the highest degree of novelty because it is the first to be inserted for markets and industries (OECD, 2005, p. 58).

**Why to innovate?**

In connection to value creation, it is of importance to illustrate additional reasons for firms to innovate, also specified as advantages of innovation. As mentioned earlier, innovation is to be known as the engine of growth (Trott, 2012, p. 6), some researchers even relate innovation to be the ultimate reason of economic growth since the eighteenth century (Tidd & Bessant, 2014, p. 9) and is either a transformation, process or change. Firms sometimes fail to innovate, because they do not recognize opportunities or in general the need for change, thereby the need can originate from outside of the industry and can appear slowly and thus stay undetected (Tidd & Bessant, 2014, p. 11).

Organizations can benefit a great deal from acting innovative. The catalyst to innovate, however, is the result of positive change that results in creating value (Tidd & Bessant, 2014, p. 9). Value creation for firms can bear different forms. For instance, Crumpton (2012, p. 98) mentions efficiency as a positive outcome of managing innovation, Thompson (1965, p. 2) stresses the implementation of new ideas, products, processes or even services. Also, Tidd & Bessant (2014, p. 9), as well as Mirvis et al. (2016, p. 5014) add survival and growth to the outcome and need of innovation sources and methods amongst other benefits such as dynamic capabilities and monetary effects. Competitive advantage as a means of innovation is added from Agarwal & Brem (2012, p. 2). Therefore, innovation matters (Tidd & Bessant, 2014, p. 13).

Looking at figure 4 as part of our preliminary framework, we want to highlight that innovation caters value in different forms or outcomes. We believe that the same as entrepreneurial motivations, value outcomes from innovation can be categorized in social, environmental and/ or economic goals in dependence on the earlier remarked entrepreneurial motivations. We are aware, that the elements of value creation are those of the triple bottom line applied in sustainability but will not be recognized as such for our thesis. What becomes obvious from the figure is, that the economic pillar appears to be overlapping the other two. This is purposely done as we mainly analyze the economic potential of FI as mentioned in our study purpose.
Innovation does not only play a role in terms of creating new products or services but captures great interest in other management and business disciplines across organizations such as marketing, operations management, entrepreneurship or research and development (Baregeh et al., 2009, p. 1324). Therefore, innovation and its importance for implementation is steadily increasing for firms to be able to embrace change.

2.1.3. Frugality
As frugality is the second major concept of FI, it is necessary to review existing literature without neglecting the approach to pertain frugality to innovation. It has been already outlined that the concept of frugality is not nascent, in fact it originally stems from the mid-sixteenth century Latin word ‘frugalis’ (frūgālis) which means thrifty and modest, clearly addressing the sufficient product quality, suitability and handiness under resource-constraints (Soni & Krishnan, 2013, p. 31; Roiland, 2016, p. 575; Tiwari et al., 2016, p. 2). According to Soni & Krishnan (2013, p. 31) frugality falls back to ancient times when economic resources were insufficient. The Oxford Dictionaries define the term ‘frugal’ as “simple and plain and costing little (Oxford Dictionaries, 2017)” and “sparing or economical as regards money or food (Oxford Dictionaries, 2017)” which can both be applied to many emerging economies nowadays such as India, where resource-constraints are similar. Since we want to analyze the concept in Germany, we would like to mention that the term ‘frugal’ also exists in the German language and refers to being ‘modest’ and ‘sparse’ (Duden Online Dictionary, 2017).

Lastovicka et al. (1999, p. 88) define frugality as the “degree to which consumers are both restrained in acquiring and in resourcefully using economic goods and services to achieve longer-term goals (Lastovicka et al., 1999, p. 88)”. However, ‘frugal’ in a literal sense generally refers commonly to resource-constraints resulting in major savings of resources (Rao, 2013, p. 70). Therefore, the reviewed literature agrees on the linkages of frugality and characteristics of sustainable lifestyle, often assuming an equation of both terms, frugality and sustainability (Levänen et al., 2015, p. 1-2). Based on the growing population and the prediction to even grow further in the future, combined with finiteness of resources, the urgency to develop innovations in respect to these facts becomes a severe issue (EYGM Limited, 2015, p. 40; Horn & Brem, 2013, p. 944; Shrivastava & Berger, 2010, p. 246). Consequently, frugality defines a concept to generate products in more frugal ways, satisfying actual needs of potential consumers, mostly based in emerging countries (Horn & Brem, 2013, p. 944). The economic utilization of these resources while developing innovations with an optimal level of sustainability, creates positive impacts on the society through preserving finite
resources for future generations (Rao, 2013, p. 70; Horn & Brem, 2013, p. 944). While previously mentioned factors are mostly concerned with resource extraction and production stages of a product, frugality goes beyond and deals with how the product is able to be operated in low-resource environments (Le Bas, 2016a, p. 4).

Furthermore, the concept of frugality is not solely concerned with material resources, but also addresses the optimization of consumption through improvements in quality, price and life of frugal products (Rao, 2013, p. 70; Le Bas, 2016a, p. 4).

2.1.4. The Term ‘Frugal Innovation’

After reviewing the single definitions of innovation and frugality, we pursue the development of a suitable definition of frugal innovation for this thesis. Although it is not evident when and by whom the term ‘frugal innovation’ was used for the first time, the concept of frugal innovation started to attract attention just after ‘The Economist’ published the article ‘First break all the rules: The charms of frugal innovation’ in the first half of 2010. Frugal innovation generally combines the goals of both singular concepts, innovation and frugal conditions mentioned in the previous section (Bhatti, 2012, p. 1; Soni & Krishnan, 2014, p. 33). The field of FI is in rather early stages of its development and therefore under-researched because of the following: The definitions of FI that exist in academic literature are ambiguous and often used interchangeably with similar concepts, such as low-cost innovation, Jugaad innovation or below-the-radar innovation (Weyrauch & Herstatt, 2016, p. 1; Hossain et al., 2016, p. 133, Brem & Ivens, 2013, p. 36; Pansera, 2013, p. 470). For further development of our thesis, it is mandatory to agree and select a certain definition to illustrate the basic understanding of frugal innovation. Thus, a profound literature review about existing definitions of FI is crucial and will be implemented by the underlying definition of frugal innovation for the ongoing work in the next section.

After reviewing existing literature about the topic, one overall definition for frugal innovation is lacking, albeit many agree on the basic principles the concept entails (Bhatti & Ventresca, 2013, p. 3). Thence, the table below suggests definitions from the most cited articles in chronological order:

<table>
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<th>Source</th>
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<td><strong>Gupta, 2011</strong></td>
<td>“Frugal Innovation is a new management philosophy, which integrates specific needs of the bottom of the pyramid markets as a starting point and works backward to develop appropriate solutions which may be significantly different from existing solutions designed to address needs of up market segments.”</td>
</tr>
<tr>
<td><strong>Basu et al., 2013, p. 64</strong></td>
<td>“Frugal Innovation is a design innovation process in which the needs and context of citizens in the developing world are put first in order to develop appropriate, adaptable, affordable, and accessible services and products for emerging markets.”</td>
</tr>
<tr>
<td><strong>Rao, 2013, p. 66</strong></td>
<td>“By economizing the usage of resource-use and aiming for simple products and services, albeit sometimes using cutting edge technology, frugal-innovations have a lot to offer for sustainable-development.”</td>
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**Simula et al., 2015, p. 1568**

“Frugal innovation can be defined as a product, service or a solution that emerges despite financial, human, technological and other resource constraints, and where the final outcome is less pricey than competitive offerings (if available) and which meets the needs of those customers who otherwise remain un-served.”

**Agnihotri, 2015, p. 401**

“Frugal innovation refers to those innovative products and services which are developed under conditions of resource constraints.”

“Due to resource constraints, these products are often technologically less advanced compared to the sophisticated counterparts, but are good enough to provide core functionality of the product.”

**Angot & Plé, 2015, p. 4**

“Frugal innovation means renewing the way that resources will be used. It aims to generate more business and social value than ‘traditional’ innovation. More business value, first, as by reaching huge segments of customers previously excluded by their poverty, frugal innovation makes possible to tackle untapped markets where the competition may be lower. But also more social value, as frugal innovation favors the economic development of or an improved quality of life for targeted populations.”

**Hossain et al., 2016, p. 132**

“Frugal innovation refers to products, services or combination of them that are affordable, sustainable, easy-to-use, and have been innovated under the resource scarcity. In general, frugal innovations are developed in and for low-income market contexts and are seen to differ from innovations in developed markets.”

**Center for Frugal Innovation in Germany**

“Innovations that seek to minimize the use of material and financial resources in the complete value chain with the objective of substantially reducing the cost of usage and/or ownership of a product while fulfilling or even exceeding pre-defined criteria of acceptable quality standards.”

Surprisingly, although many scholars agree that frugal innovation is mostly a concept in developing countries, the definitions from above do not directly refer to these markets as the focal point of FI. On the contrary, as to the mentioned definitions by Basu et al. (2013, p. 64) and Hossain et al. (2016, p. 132), other authors formulate rather broadly, leaving room for interpretation and adaptation to other scenarios (e.g. Angot & Plé, 2015, p. 4). Accordingly, Gupta (2011) refers to the ‘bottom of the pyramid markets’ (BoP), linking to the work of Prahalad (2005), who in a path-breaking way, introduced unconventional methods to improve social life of around four billion poorest people in the world. These people have to get along with less than $2 a day (Prahalad, 2005, p. 3). Due to the low-income in BoP markets, these customer segments are mostly not considered by companies, although posing as a multi trillion-dollar market that is not served to a certain extent (Angot & Plé, 2015, p. 4). However, even though the term BoP is originated for developing markets, we see the necessity to adapt the term for developed countries based on an existing threshold of poverty (Soni & Krishnan, 2014, p. 31; Hossain et al., 2016, p. 132).

This goes in hand with the quote by Petrick & Juntiwasarakij that “innovation happens where need meets opportunity” (Petrick & Juntiwasarakij, 2011, p. 24) with reference to BoP markets where needs are often more basic in emerging markets. Therefore, emerging markets are becoming hotbeds of innovation, which agrees with the definition of frugal innovation by Basu et al. (2013, p. 64). As it will become clearer through the analysis of other definitions, the economic situation of a certain market is not the only crucial essence in FI. One underlying feature that most definitions of frugal innovations entail are issues of affordability (Hossain et al., 2016, p. 132; Simula et al., 2015, p.
This does not only relate to the retail price, but the total cost of ownership (Pervez et al., 2013, p. 60; Center for Frugal Innovation, n.d.).

The definition of Angot & Plé (2015, p. 4) however goes beyond and regards frugal innovation as ‘win-win-approach’. Accordingly, improvements in quality of life for target-oriented customer segments come along with economic advantage for companies through addressing previously rather neglected markets. In fact, other authors weigh and acknowledge the potential of FI to not just fulfill the major aim of alleviating poverty but enabling companies to make profits (Knorringa et al., 2016, p. 144; Pansera, 2013, p. 470; Pitta et al., 2008, p. 399; Hall, 2014, p. 266; Dolan, 2012, p. 3).

To proceed, a working definition for continuing our research is mandatory. In line with the suggested definition of innovation by Tidd & Bessant, innovation is “the process of creating value from ideas” (Tidd & Bessant, 2014, p. 3) and adding relevant aspects of frugality leads to the definition of frugal innovation that will be the base line for the thesis. For the ongoing paper, we define frugal innovation as “thrifty, modest and affordable innovations, valuable for BoP customers”.

This definition was developed to combine the most important aspects of definitions found in the existing literature from our point of view. Compared to the existing definitions that often incorporate a variety of concepts (e.g. Angot & Plé, 2015, p. 4), we decided to create an intuitive definition. First, the term ‘thrifty’ traces back to the sixteenth-century term ‘frūgālis’ (Soni & Krishnan, 2013, p. 31; Roioland, 2016, p. 575; Tiwari et al., 2016b, p. 2). It incorporates the concepts of resource-constraints (Agnihotri, 2015, p. 401; Simula et al., 2015, p. 1568), resource-use (Rao, 2013, p. 66), and resource-scarcity (Hossain et al., 2016, p. 132) that are oftentimes used interchangeably. Moreover, Hossain et al. (2016, p. 132) and Rao (2013, p. 66) refer to the implicit advantage of frugal innovation in terms of sustainable development. Second, the concept of ‘modesty’ includes the idea of appropriate and adaptable (Basu et al., 2013, p. 64), easy-to-use (Hossain et al., 2016, p. 132) and good-enough products (Agnihotri, 2015, p. 401). Third, as FI refer to resource-constraints, these constraints come from a customer perspective in terms of lacking financial resources. One overall principle of frugal products and services is therefore the issue of affordability, which is why it needs to be integrated into the working definition (Rao, 2013, p. 66; Bharti et al., 2014, p. 172; Basu et al., 2013, p. 64; Simula et al., 2015, p. 1568; Hossain et al., 2016, p. 132; Center for Frugal Innovation, n.d.). The term ‘affordable’ is adapted in the literature with ‘accessible’ (Basu et al., 2013, p. 64), ‘less pricey’ (Simula et al., 2015, p. 1568), ‘low-income market contexts’ (Hossain et al., 2016, p. 132), and ‘reducing the cost of usage and/or ownership’ (Center for Frugal Innovation, n.d.). Fourth, value created through FI can be both, social and/or economic (Angot & Plé, 2015, p. 4). While the social factor of serving people in untapped markets is an important aspect, companies can benefit from this gap through opening new customer segments and thus, generate higher revenues (e.g. Knorringa et al., 2016, p. 144). Yet, a clear definition of what is intended with ‘value’, could limit the quality and outcomes of our research. Fifth, BoP customers are integrated as these are the focal target group for FI even though other customer groups may also benefit from this type of innovation. It is therefore mandatory to develop products focusing on the core needs of people situated in the bottom of the economic pyramid (Gupta, 2011). This not only includes differences amongst the buying behavior of customers in developing vs developed markets as described by Hang, Chen & Subramian (2010, p. 25). It also refers to
significant discrepancies to existing counterparts, if any, that are usually initiated and developed for high-income classes providing functions and features less relevant to BoP customers (Petrick & Juntiwasarakij, 2011, p. 26; Soni & Krishnan, 2013, p. 42; Agnihotri, 2015, p. 401; Simula et al., 2015, p. 1568; Hossain et al., 2016, p. 133).

After we explained our definition approach, we see the necessity to mention a few more details. We generally do not refer to a certain economic context, unlike Basu et al. (2013, p. 64) do by referring to emerging markets. The working definition does not explicitly refer to developing countries, in which frugal innovation typically occur, but enables an investigation of developed markets as well. Also, reference to either products or services is avoided, since omitting one or another would lead to less transferable and applicable study results, which is why we will consider both throughout the course of the thesis. Per Soni & Krishnan (2013, p. 36) successful FI must not necessarily be only products or services, yet deep exploration of new business models and redefining new standards for cost-value-ratios while grinding new attitudes of parsimony are also important to consider. We also do not incorporate details about characteristics of FI, because although we found mutual criteria in the existing literature, these are always deduced from emerging market contexts (Kuo, 2016, p. 3; Rao, 2013, p. 67; Weyrauch & Herstatt, 2016, p. 6-7; Angot & Plé, 2015, p. 4; Sinha, 2013, p. 71). As the concept of FI in developed markets is not sufficiently researched, these characteristics could not be incorporated in our definition.

In this regard, we want to stress that the idea of frugal innovation in the context of developed countries is meant to be generated for and in these markets compared to the traditional process of innovation (top-down) or reverse innovation (bottom-up).

2.1.5. Distinction Between Similar Innovation Concepts
Based on the reader's perspective, the different concepts do not add on the value and might, to some extent, confuse the reader. However, to be able to further discuss the concept of FI, one needs to know ist boundaries. This will also positively contribute to the literature.

While it has already been clarified, the term ‘frugal innovation’ itself is not defined compellingly, other frameworks and concepts appear to be used in similar ways (Von Zedtwitz et al., 2015, p. 23; Tiwari et al., 2016, p. 2; Brem & Ivens, 2013, p. 31; Khan, 2016, p. 4-5). Moreover, FI is partly used as a means to unite different innovation types under one umbrella with developing countries as the focal point (Adari & Ganesh, 2015, p. 8; Tiwari & Herstatt, 2012, p. 249). After a thorough literature review, differences, sometimes rather slight, can be drawn, in order to distinguish frugal innovation from other innovation forms. Mentioned by Brem & Wolfram (2014, p. 2), reviewing articles dealing with innovation approaches from and/or for emerging markets, it is conspicuous that common understanding of the terms and the relations between the different approaches is missing. Despite the fact, that the core idea of different innovation types remains the same, i.e. improving quality of life in emerging markets, differences between several innovation concepts can still be noted. Additionally, one could critically argue that the differentiation of the similar concepts of FI adds no further value for our thesis and might lead to confusion but it needs to be mentioned, that other researchers interested in this topic can draw upon the provided differentiation from interchangeably used concepts. Thus, we see the necessity to distinguish the concept of frugal innovation
and its boundaries from other innovation types to contribute to the current knowledge about the concept.


Because some terms are used interchangeably or a notion can be classified in a similar way, only the ones adding value to the knowledge about the FI concept will be further discussed in the following. One example of such exchangeability is that frugal or Jugaad innovations often remain unknown to the mass segment and therefore can also be classified as ‘Below the radar’ innovations (Papaioannou, 2014, p. 195). Moreover, certain criteria from Gandhian innovation are also inherent in Jugaad innovation, therefore both terms are often used similarly. Thence, we will only develop the terms Jugaad innovation, Reverse innovation, Cost innovation, and Good-enough innovation further in our thesis.

**Jugaad/Gandhian Innovation vs Grassroot Innovation**

One basic definition of Jugaad innovation is published by Prahalad & Mashelkar (2010, p. 134) as being implemented in the Indian tradition and DNA. As extension to the Indian tradition, Jugaad is about developing “alternatives, improvisations, and make-dos to overcome a lack of resources and solve seemingly insoluble problems” (Prahalad & Mashelkar, 2010, p. 134)”. Moreover, according to Brem & Wolfram (2014, p. 4), involving the users themselves in the process of creating innovative ideas is another basic principle of Jugaad innovation. Based on scarcity of all kinds of resources on the rural countryside of India, farmers were forced to initiate imaginative problem-solving instead of relying on technological inventions, leading to a manner of self-help. Furthermore, Brem & Wolfram (2014, p. 4) highlight the radical innovativeness of Jugaad inventions, because they start with the approach of solving the problem that occurs instead of starting with a focal product. Other authors add few criteria to complete the concept of Jugaad. Therefore, Jugaad innovation is based on a rather temporary solution to problems occurring in the daily live, i.e. “making do with what one has” (Sinha, 2013, p. 71)”. Jugaad innovations are also not likely to be commercially exploited or reaching large scales of diffusion among societies (Agnihotri, 2015, p. 406). Agnihotri (2015, p. 406) also adds the fundamental possibility of Jugaad innovations being of illegal nature, like stealing electricity.

The term Jugaad is commonly used interchangeably with Gandhian innovation, mostly because at the bottom of this innovation type, two of Mahatma Gandhi’s tenets are
formative: affordability and sustainability (Prahalad & Mashelkar, 2010, p. 134; von Zedtwitz et al., 2015, p. 14). Different articles, however, see Jugaad and Gandhian innovation as distinctive concepts. Although, Brem & Wolfram (2014) base their assumptions on the publication by Prahalad & Mashelkar (2010), who classify Jugaad and Gandhian innovation as the same, Bream & Wolfram seem to not agree with them in the sense that both innovation types should be regarded differently (Brem & Wolfram, 2014, p. 13).

Nevertheless, the ongoing thesis will be following the approach of treating Jugaad and Gandhian as the same leading to the short definition that Jugaad innovations are innovations that stem from innovative ideas in solving a certain problem through geniality in a short amount of time (Soni & Krishnan, 2014, p. 35). The short definition will therefore be read as ‘improvised with less’.

To be able to distinguish Jugaad from ‘Grassroots’ innovation, one has to add further criteria. Grassroots innovations are typically defined by their social influence, regarding poor people as inventors (Brem & Wolfram, 2014, p. 8). Granted, there would be no obvious difference between Jugaad and grassroots innovation. The crucial part to distinguish the concepts, however, refers to the criticality of networking and sustainable awareness, with both being neglected in the concept of Jugaad (Brem & Wolfram, 2014, p. 8). Accordingly, networking between local people is an important factor, as science, policy and demand are hardly met in the rural areas of emerging countries.

Reverse Innovation
Reverse innovation is also one dominant innovation typology used in the context of emerging markets and FI. Generally, following the definition of von Zedtwitz et al. (2015), reverse innovations are "characterized by a reversal of the flow of innovation from a developing to an advanced country, as long as this innovation is eventually introduced to an advanced country’s market (von Zedtwitz et al., 2015, p.13)“. In contrary to frugal innovation, reverse innovation crosses the borders of the previously targeted markets, as the product will be modified for the sale in the industrialized world (Brem & Wolfram, 2014, p. 9). As the book ‘Reverse Innovation: Create Far from Home, Win Everywhere’ by Govindarajan & Trimble (2012) suggests, the concept of reverse innovative products is not geographically limited.

Reverse innovations raised much awareness as they have become popular in managerial and academic terms. Whereas the traditional view of innovation respects innovations as a top-down approach, i.e. from developed countries to the emerging world, reverse innovation stresses the impact of products emanating from developing countries (The Economist, 2010a; Brem & Wolfram, 2014, p. 9; Agarwal & Brem, 2012, p. 12). The reason for confusion between the terms of frugal and reverse innovation is based on the degree of scalability of each innovation. Hossain et al. (2016) can therefore be cited, that obviously “all reverse innovations are also frugal innovations. However, not all frugal innovations become reverse innovations for some compelling reasons (Hossain et al., 2016, p. 134)”.

Summarized, reverse innovations are products and services, that are originally developed and launched in developing markets and trickle up to developed countries (Govindarajan & Ramamurti, 2011, p. 192; Sinha, 2013, p. 71).
Cost Innovation
As the term already suggests, cost innovations are basically referring to products that are produced with minimal cost, leading to lower retail prices for customers and therefore to a higher degree of affordability which is a core feature of FI (Pansera, 2013, p. 476; Basu et al., 2013, p. 64; Simula et al., 2015, p. 1568; Hossain et al., 2016, p. 132). Without compromising the quality of the products, cost-innovative products aim for better price-performance-ratios, i.e. the value for the customer is high compared to the given price, which not only has impacts in emerging markets but also can be considered threat for existing products and services in the developed world (Agnihotri, 2015, p. 399). Ways to achieve lower costs and therefore the ability to set lower prices, are analyzing all parts of the value chain, from manufacturing as well as sales to marketing and distribution (Simula et al., 2015, p. 2).

Williamson (2010) goes beyond processes and indicates one major risk comprised in low-cost innovations, namely the disruptive potential in changing requirements for success in the market (Williamson, 2010, p. 348). We acknowledge this threat but also see in incorporated in other innovation types. Being aware of this potential has managerial implications for corporate business models. Analyzing the cost structure objectively, the state of ‘doing the same or even more with less’ can be achieved (Adari & Ganesh, 2015, p. 8; Ostraszewska & Tylec, 2015, p. 71).

Good-Enough-Innovation
Good-enough-innovations differ much from previously mentioned innovation types. The key attribute is that customers seek for products following a no-frills design approach to meet actual needs. Also, unnecessary product features are left out while being at a lower price-level to be affordable due to customary materials and technology (Soni & Krishnan, 2014, p. 38; Zeschky et al., 2014, p. 256). These products are typically regarded as inferior to existing, predominantly Western counterparts, providing comparably limited functionality. In other words, the products and services are released below standard, yet are ‘good-enough’ to satisfy the needs of the target group (Hossain et al., 2016, p. 137). Admittedly, the definition of good-enough innovation is overlapping with the term frugal innovation, which causes confusion. The necessity for further exploitation of the term in our thesis, however, is based on the accordance of several authors that good-enough innovations have also far-reaching impacts on markets of the developed world because of increased numbers of price-sensitive customers (Hossain et al., 2016, p. 134; Soni & Krishnan, 2014, p. 31; Knorringa et al., 2016, p. 144; Khan, 2016, p. 7; Lehner & Gausemeier, 2016, p. 14). A prominent example is ‘Haier’, a Chinese brand that is mostly known for their refrigerators, who developed a washing machine dedicated to a tiny amount of wash load (Hang et al., 2010, p. 24). The crucial and distinctive feature of good-enough compared to FI is based on the adaption of existing products, that for one reason or another are not scalable in certain markets.

In short: Good-enough products usually provide less, albeit sufficient functionality and performance than their (industrialized) equivalent to reach lower prices for the mass market. Instead of following the wording by Adari & Ganesh (2015, p. 8), the short definition of good-enough-innovation will be adapted to ‘customized for less’, to point out the modulation of an existing product.
The following illustration sums up what has been elaborated so far. The figure helps in distinguishing the concepts and refers to emerging and developed markets. As frugal innovation is, by some authors (e.g. Adari & Ganesh, 2015, p. 8) seen as concept that unites other types under one umbrella, the hierarchy sets FI superior to others.

![Figure 5. Differences and hierarchies of innovation types](image)

### 2.1.6. Characteristics of Frugal Innovation

After a consent has now been reached about what frugal innovation is and how it can be distinguished from similar concepts, it is still unclear which characteristics are entailed in FI to be legitimately labeled as such. By purpose, characteristics are left out in the working definition about frugal innovation (“thrifty, modest and affordable innovations, valuable for BoP customers”) as they might not be equally applied in developed countries. Yet, it is crucial, albeit by now not adequately addressed to shed light on entailed criteria that make them worth being acquired by people of the targeted customer group. Due to the novelty of the conception, i.e. the state of underdevelopment of the concept, even notions of standardized characterizations are lacking and can only be deduced from products and literature focusing on emerging markets.

The most prominent example of FI in emerging markets is the world’s cheapest car, the Tata Nano developed and sold by the Indian company Tata in India and Cambodia (Williamson, 2010, p. 345; Simula, 2015, p. 3), the battery-driven refrigerator Chotukool (Le Bas, 2016b, p. 11; Tiwari & Herstatt, 2012, p. 107), Nokia’s 1100 with lower features to be sold at $15 (Angot & Plé, 2015, p. 13; Agnihotri, 2015, p. 403), as well as the mobile payment system M-Pesa initiated in Kenya and Tanzania (Petrick & Juntiwasarakij, 2011, p. 25; Khan, 2016, p. 18).

Several authors (e.g. Kuo, 2014, p. 4; Basu et al., 2013, p. 65-66; Weyrauch & Herstatt, 2016, p. 6-7) deduce characteristics from the presented products as examples. The overall combining feature of these innovations is the social focus on emerging countries in order to alleviate the situation of poverty and to serve untapped markets at the bottom of the economic pyramid (Tiwari & Herstatt, 2012, p. 97; Prahalad, 2005).
Based on the literature that supports the definition of frugal innovation, several criteria were found. After reviewing them in detail, we defined seven characteristics, namely core functionality, performance level, usage-centered, ruggedization, cost reduction, no-frills strategy, and environmental issues (Kuo, 2014, p. 4; Basu et al., 2013, p. 65-66; Kuo, 2016, p. 3; Rao, 2013, p. 67; Weyrauch & Herstatt, 2016, p. 6-7; Angot & Plé, 2015, p. 4; Sinha, 2013, p. 71, Khan, 2016, p. 8). In line with our definition and the meaning of ‘frugal’, the defined characteristics can be categorized under the three defining pillars ‘thrifty’, ‘modest’ and ‘affordable’. The following figure illustrates these seven categories and mentions further distinctive criteria.

Figure 6. Characteristics of frugal innovations in emerging markets

In this respect, we want to stress environmental issues. As it has become clear by now, FI tend to use less resources in different stages from resource extraction to product use and end-of-life strategy (Greymyr et al., 2014, p. 233; Romli et al., 2015, p. 549; Buchert et al., 2015, p. 71). One could therefore argue that frugal innovation can also be a means to achieve higher scores in sustainability rankings of the products. The study resulted by Weyrauch & Herstatt (2016, p. 10) indicates that frugal innovations do not necessarily incorporate environmental issues in a direct way, yet can be achieved indirectly. Frugal products are often developed under resource-constraints in terms of development and resource-demand during usage, leading to an implicit contribution to environmental sustainability. This premise thwarts the common assumption that sustainability is not the primary focus of FI (Weyrauch & Herstatt, 2016, p. 10).

We acknowledge the potential of frugal innovation in this regard and see it as an important issue. Though, it is rather of secondary nature and will only be considered if our interviewees see a direct connection between economic and social goals.

2.1.7. Importance, Opportunities and Challenges of Frugal Innovation

Social Importance

We mentioned earlier that the economic-driven opportunity is the focal point in our research. Nevertheless, the social perspective must not be neglected, which is why we cover it as sub-section in this chapter. Our main perspective remains economically even though we have to address the social aspect for the integrity of the study.

“No society can surely be flourishing and happy, of which the far greater part of the members are poor and miserable (Hall, 2014, p. 266)”. This quotation by Jeremy Hall
refers to the social aim of frugal innovation to foster a better quality of life, which is supported by other authors (e.g. Simula et al., 2015, p. 3). We therefore dedicate this chapter to the issues of social development for rounding up different concepts, including the sustainability-driven perspective.

The approach of sustainable development corresponds to the ‘triple-bottom-line’ approach and is thus often respected as the means of intersection of the three separate albeit connected entities of environment, society and economy (Giddings et al., 2002, p. 187). Following the definition of the Brundtland Commission, sustainable development is meeting “the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987, p. 43)”. This definition is argued to fail in precise clarification of what has to be done by companies, especially in terms of new product development (Pujari, 2006, p. 77; Petala et al., 2010, p. 172; Baumgartner, 2011, p. 783). Therefore, this criticism has led to the notion and wide acceptance of the triple bottom line as means to address sustainable development more effectively, defined as “simultaneous pursuit of economic prosperity, environmental quality, and social equity (Elkington, 1999, p. 397)”. Criticism to the concept comes in the sense that, social change cannot be realized as long as that the concept remains a ‘black box’, i.e. that social, environmental and economic aims are not only just stated but linked and explained how they can be achieved (Gibbs, 2006, p. 65). While we generally apply the threefold concept coined by Elkington, we reject the term ‘sustainable development’ for our thesis but refer to the concept rather as value creation as outcome of FI.

Nowadays, organizations confront challenges that can be explained by increased expectations from stakeholders and the public image to take part of addressing environmental, economic and especially social issues (Mirvis et al., 2016, p. 5014). Thus, another type is social-frugal-innovation, that turns out to have a major social motivation and is dedicated solely to facilitate a better livelihood (Simula et al., 2015, p. 3). However, social-frugal-innovation is to be known to not only benefit firms and consumers simultaneously, but to provoke firms to become active in the bottom of the pyramid markets (Tiwari & Herstatt, 2012, p. 97). We apply the definition of Herrera (2015) in this context: “Social innovation is a measurable, replicable initiative that uses a new concept or a new application of an existing concept to create shareholder and social value (Herrera, 2015, p. 1469)”. Hence, it is not only a means to satisfy public and stakeholder/shareholder needs, increase growth and competitive advantage (Herrera, 2015, p. 1468), but also to enhance supply chains and reach socially and environmentally conscious customers (Mirvis et al., 2016, p. 5014). Nevertheless, since there is not a uniform definition of social innovation, a discussion about the problematic in future research is inevitable in terms of how it is understood and implemented (Osburg & Schmidpeter, 2013, p. 13).

Moreover, as Tiwari & Herstatt (2012, p. 97) point out, the aim of social-frugal-innovation offers two major advantages, first benefits for both firms and consumers (see also opportunities right after), and second, to provoke firms to become active in the bottom of the pyramid markets (Tiwari & Herstatt, 2012, p. 97). Also, Missimer, Robèrt & Broman (2016, p. 33) stress that in a social society, people must be able to satisfy their basic needs. Furthermore, what becomes clear from the executions about the importance of FI in general is the social aim, that is inherent with this type of innovation. Not only offering products to people, who would otherwise not be able to afford them, but also the whole inclusion of untapped customer groups into the society
can be considered a target of the frugal innovation concept (Knorringa et al., 2016, p. 148).

**Opportunities**

Another issue, besides the general social importance refers to economic opportunities and therefore justification for active engagement and evaluation of companies. The inclusion of the ‘poor’, or “inclusive business for the poor (Knorringa et al., 2016, p. 147)”, marries two aims: first alleviating poverty as the core aim of frugal innovation while, second, generating profits. Several authors of the reviewed literature regard this opportunity as a ‘win-win’ scenario. As this sounds too good to be true, the potential is obviously polarizing (Knorringa et al., 2016, p. 148) and necessarily includes BoP markets as producers, and not only consumers (Dolan, 2012, p. 7; Pervez et al., 2013, p. 63). Hahn (2012) therefore states that “business activities can contribute to the long-term goal of poverty alleviation by embedding the neglected poor parts of the world population into efficient value chains and market structures, both as consumers and as producers or distributors (Hahn, 2012, p. 51).”

The reason why the bottom of the economic pyramid has been rather neglected for long times is the general underlying assumption that the poor or middle class, for which these products are mainly developed, have no or only little purchasing power, i.e. do not represent a lucrative market (Prabhala, 2005, p. 10; Sinha, 2013, p. 71). Anderson & Billou (2007) also refer to illiteracy, corruption and unsophisticated infrastructures as reasons why these markets have been neglected so far (Anderson & Billou, 2007, p. 14). On the contrary, Hammond et al. (2007, p. 148) argue that the four billion people living in the bottom of the pyramid stand for an annual income of $5 trillion, which establishes the BoP as an important market (Hammond et al., 2007, p. 148; Pervez et al., 2013, p. 54; Prabhala, 2005, p. 4). Moreover, Pansera (2013, p. 470), explains the win-win scenario of private companies having access to untapped markets while the people living in the bottom of the pyramid can gain access to consumer goods that have previously been too expensive or unattainable.

In his book ‘The fortune at the bottom of the pyramid’, Prabhala (2005, p. 47) further questions if, despite the low-income situation at the BoP, managerial engagement in frugal innovation is justified, even in multi-national corporations. Prabhala then offers four sources of potential opportunities, vindicating both time and energy to serve BoP markets: (1) the size of a market alone can be attractive for engagement, (2) local innovations can be leveraged across multiple BoP markets, (3) some innovations from BoP markets could also find use in developed countries, and (4) lessons for managerial practices in global firms can be learned from BoP markets (Prabhala, 2005, p. 47-48). However, these assumptions do not come without criticism which will be illustrated in the following.

**Challenges and Criticism of Frugal Innovations**

What has been mentioned so far sounds promising, maybe overly promising. We are well-aware that the ‘win-win’ approach of frugal innovation is not without criticism. We base our reflection on critics by Karnani (2009) and his arguments about the failures of this appealing idea. He states that the BoP literature often confuses the poor bottom of the pyramid with the emerging middle class (Karnani, 2009, p. 7), which we also criticized in the Ernst & Young survey in the introduction. Many products and examples that supposedly strengthen this approach involve companies being profitable by selling
to the middle class in countries of the developing world (Anderson & Billou, 2007, p. 14). In an earlier version of critical reflection upon the theory by Prahalad, Karnani (2007), also questions the assumptions towards the potential market size. While Prahalad (2005) defines the size of BoP markets to results at $5 trillion of purchasing power, other calculations state significantly lower numbers, from $1.2 to $1.7 trillion (Karnani, 2007, p. 91; Pitta et al., 2008, p. 395; Anderson & Billou, 2007, p. 14). More, Karnani (2007, p. 91) also points out the difficulties of serving the BoP as the customers are often geographically spread and culturally heterogeneous (Karnani, 2007, p. 91; Pitta et al., 2008, p. 395; Pervez et al., 2013, p. 55). We believe the fact that remains, detached from the actual market size, is the significance of BoP markets to be considered as a valuable source of income for companies.

Notwithstanding of the way on how the bottom of the pyramid is defined, with which we deal with later in our thesis, business models, must undergo a transposition to be equally applicable in developed markets (Angot & Plé, 2015, p. 6; Pitta et al., 2008, p. 400; Esko et al., 2013, p. 231). Innovations in terms of technology and business models must be radical in nature (Pitta et al., 2008, p. 397). Supported by Knorringa et al. (2016, p. 146), FI are the basis to redefine business models and to adjust the value chain to create a more inclusive market, targeting deficiently served customers with affordability-constraints. Quoting ‘The Economist’, ‘frugal innovation is not just about redesigning products; it involves rethinking entire production processes and business models (The Economist, 2010a)”. This refers to all steps in the innovation cycle (Knorringa et al., 2016, p. 145). Angot & Plé (2015, p. 10-11) also describe the differences when designing a business model for either developing or developed countries. Therefore, overestimating the actual purchasing power of customers, mismatch between perceptions about price and quality, as well as imbalances between market characteristics and firm’s structure shall be avoided. Other authors (e.g. Bharti et al., 2014) do not solely focus on business models, but stress the importance of a changed mindset in terms of seeing the BoP not only as subjugated group of people, but as potential and valuable customers (Bharti et al., 2014, p. 172; Khan, 2016, p. 6).

In addition to the aforementioned urgency to adapt the business model, Khan (2016, p. 6) generally states that ingenuity and vision are also important prerequisites for the development of FI. Several authors stress the importance of entrepreneurial activities in BoP markets to alleviate poverty, detached from the size and purpose of companies such as non-governmental organizations or multinational corporations (Paton & Halme, 2007, p. 170; Kandachar & Palme, 2008, p. 7; Tiwari & Herstatt, 2012, p. 97). Though, as requirement, the environment must be conducive to meet the success criteria defined by Pervez et al. (2013, p. 60-61; Khan, 2016, p. 6). These are the following: (1) Going beyond solely selling to the poor which includes understanding complicated needs that are deeply rooted in society and focusing on long-term value creation for BoP price-sensitive customers. (2) Considering the BoP also as producers with shifting the focus from selling to the BoP towards buying from them and creating a fortune in BoP market. And (3) BoP engagement which refers to co-creation of products with the bottom of the pyramid in a ‘business to community’ approach. These success criteria are in line with the notion by Khan (2016, p. 6) about the urgency of a company to embed itself into the BoP customer community, to be able to fully and understand fundamental needs of potential customers (Khan, 2016, p. 6, Pervez et al., 2013, p. 63). Thus, FI must not only cope with resource-constraints, but also aim to improve all singular concepts of the triple bottom line (Khan, 2016, p. 6). To achieve this balance, firms
must address issues of product acceptability in the BoP market, availability, affordability and awareness (Khan, 2016, p. 6; Anderson & Billou, 2007, p. 15-16; Esko et al., 2013, p. 231; Pansera, 2013, p. 471).

![Diagram showing 4 A's: Affordability, Availability, Awareness, Acceptability]

Figure 7. Requirements for success in BoP markets

These challenges demonstrate the questionability of the concept of FI. We therefore continue our thesis by acknowledging the potential that FI have in both dimensions, positive and negative consequences.

2.1.8. Summary and Conclusion of Frugal Innovation

As shown, the term frugal innovation refers to a rather novel concept, of which ‘The Economist’ was amongst the first to explicitly elaborate about it. To date, no unifying definition can be found in the literature, which lead to the working definition that will be the core conception for our thesis. Hence, in accordance to several authors (Weyrauch & Herstatt, 2016, p. 1; Hossain et al., 2016, p. 133, Brem & Ivens, 2013, p. 36; Pansera, 2013, p. 470) we define FI as “thrifty, modest and affordable innovations, valuable for BoP customers”.

Moreover, other concepts, of which some are seen inferior to frugal innovation as the unifying innovation type, like Jugaad innovation or good-enough innovation, are often used interchangeably. Though, differences amongst the concepts could be carved out. Additionally, certain criteria that some scholars mention in their work (e.g. Basu et al., 2013, p. 65-66; Kuo, 2016, p. 3; Rao, 2013, p. 67) were used to deduce seven criteria categories, that are helpful in labeling FI as such accordingly, namely core functionality, performance level, usage-centered, ruggedization, cost reduction, no-frills strategy and environmental issues. Resulting from that, the importance of frugal innovations in terms of social inclusion and the economic opportunities were presented, also in reference to Prahalad (2005) who originated the concept of the bottom of the economic pyramid. These statements were accompanied by challenges like the necessity to adapt the business model or the embeddedness of a company deeper into the market.

2.2. Developed Countries

*Although the bottom of the pyramid is an approach created by Prahalad (2005) and in the first place solely referring to developing countries, the same approach can be adapted to developed countries, where several segments of people also face difficulties (Hossain et al., 2016, p. 134; Soni & Krishnan, 2014, p. 31; Adari & Ganesh, 2015, p. 11). In the next section of this thesis, the main focus will therefore be on the underlying conditions in developed countries. This part is divided in four sections. In the first one, we profile developed countries based on official definitions from the United Nations. The second and third part will then focus on influences on consumption behavior and the determinants why Germany will be the focal market in our research. Lastly, the BoP in Germany will be defined and illustrated.*
2.2.1. Overview and Illustration of Developed Countries

Portraying developed countries

The previous chapters in our thesis were concerned with missing definitions, that could commonly be used, cited and applied in this context. Surprisingly, this state of inconsistency is meant to be continued, even in terms of distinguishing developed from developing countries. To find answers to the research questions, developed and emerging markets need to be differentiated in several aspects. Thus, we will discern both concepts and profile industrialized countries in order to be able to proceed. Hence, the following quotation was found on the webpage of the United Nations Statistics Division: “There is no established convention for the designation of ‘developed’ and ‘developing’ countries or areas in the United Nations system. In common practice, Japan in Asia, Canada and the United States in northern America, Australia and New Zealand in Oceania, and Europe are considered ‘developed’ regions or areas (UNSD, 2016)”. Podkaminer (2013, p. 2) delves deeper into a potential distinction and describes the ‘backwardness’ between Central and Eastern European Countries and Core Western countries. We follow this approach and focus on countries of Western Europe for further discussions.

One certain key performance indicator was found that is commonly used to define whether a country scores high in terms of degree of development or not. The United Nations Development Programme therefore created the ‘Human Development Index’ (thereafter HDI) to stress that not only economic growth and safety should be the core of the assessment of the development of a country, but also people and their capabilities (UNDP, n.d.). The HDI is the result of a calculation approach including three key dimensions of human development: (1) health dimension, referring to life expectancy at birth, (2) education dimension concerned with mean years of schooling for adults at the age of 25 (+) and expected years of schooling for children when entering school, and (3) standard of living dimension which complies with the gross national income per capita.

Despite the applicability of the HDI in our thesis, we would like to stress that other criteria might also be worth considering in such an index like unemployment rate, gross domestic product (GDP), or sustainability engagement and consumption patterns. However, in order to determine the countries that are relevant for later analysis in our thesis, the focus will be on countries having a very high HDI, i.e. 0.800 or higher. This categorization refers to the UNDP. Consequently, countries that score below 0.550 define a low human development, scores between 0.550 – 0.699 define medium stance and scores between 0.700 – 0.799 define high human development (UNDP, 2015, p. 204).

The presented table in appendix 1 presents 10 countries having the highest score in terms of HDI in 2015, therefore having a very high Human Development Index. These countries are all considered developed and show a clear difference in the mentioned factors compared to the less developed countries.

Differences between Emerging and Developed Countries

The differences are mainly drawn from the Human Development Report (2015) by the United Nations Development Programme. To continue the chronology of the above table, five countries from the very bottom of the HDI ranking are equally represented (see appendix 2).
Comparing the top with the bottom of the ranking, therefore only considering the dimensions of health, education and living standards, already point out significant differences in all the dimensions. However, the most influential dimension may be the educational perspective, with people in Niger and Chad only attending school for 1.5 respectively 1.9 years. In this respect, illiteracy is an important point to be mentioned and we see clear linkage between low educational standards and the other two determinants of the HDI of a country, i.e. low life expectancy and poverty.

Based on a thorough literature review and a diversity of publications from institutions like United Nations, Unicef and World Bank, seven categories could be deduced to illustrate a differentiation between developed countries and developing countries. The results might be unsurprising for the reader, yet the current state of imbalance has relevance for the purpose of our thesis and it is thus obligatory to distinguish both at this stage. Disparities within one country of the developed world may be not as severe as compared to the developing world, however, the gap between several population groups can cause challenges for companies and governments anyway. The table presented in appendix 3 shows the criteria to distinguish properly between both development states.

The first criterion refers to the industrial economics (A), (see appendix 3). While the economic landscape in developing countries is mostly of agricultural nature, industrialized countries, as the name already implies, are rather based on industrial development. However, a shift from agriculture towards early stages of industrialization, albeit slowly, can be noticed in developing countries (UNIDO, 2015, p. 46; Kniivilä, 2007, p. 299). The second criterion refers to citizens (B) and how wealth is distributed. Unsurprisingly, though, people in developed countries are usually well-situated, yet the gap between poverty and wealth has been steadily increasing in the last two decades (OECD, 2016) compared with relatively poor citizens in developing countries. Nevertheless, developed countries apparently have their own bottom of the pyramid, which we would like to address at a later point more detailed.

In respect to infrastructure (C) as an antecedent for economic wealth and growth, the World Bank created the Logistics Performance Index (LPI) as a combined calculation of customs, infrastructure, shipments, logistics competence, tracking and tracing, and timeliness (World Bank, 2016). Countries that are on top of the HDI ranking are typically seated on top of the LPI ranking as well, with Germany resulting within the very high HDI rank for example. Countries such as Chad however rank on 145 from 160, with significant differences in all the six parameters. Regarding the government (D), comparing maps showing the HDI worldwide with the global corruption map by Transparency International (2017), it brings interesting albeit alarming results. One notices that countries scoring high on the HDI also have a low corruption index, and vice versa. This counts in particular for countries in Western Europe, Australia/New Zealand, Canada and the United States. Thus, it effectively proves that while few people may benefit from a corruptive system, the majority will be left behind.

The next category is health care (E), complemented by one of the parameters of the HDI, namely life expectancy. Herzer & Nunnenkamp (2015, p. 2) see a relationship between the quality of healthcare and how income is spread. In other words: Where there are high income differences within one country, the health system is considered less good. This goes also in hand with the significantly lower life expectancy at birth and child mortality rate that is significantly higher in developing countries (UNDP,
The next distinctive feature is the already illustrated Human Development Index (F). It has also been explained with fairly large differences between countries at the top vs the bottom of the ranking. The last criteria, by which developing and developed countries can be distinguished is the water and food supply (G). The illustrative map from Canadian Geographic (n.d.) helps identifying countries where the access to clean drinking water is high or low. Especially some African countries, that fall behind on other scores as well, show low levels of access to clean water even though they are only slightly below the average water availability and still have more than Asia or Europe (Jones & Van der Walt, 2004, p. 105).

### 2.2.2. Influences on Consumption Behavior in Developed Countries

To analyze the application status of FI in Germany, we need to identify and explain influence factors that have a direct and/or indirect impact on peoples’ consumption behavior. Based on different possibilities, along with all seven categories mentioned in the previous subchapter, consumption behavior in developed countries differs from consumption behavior in developing countries (Davies et al., 2007, p. 1; Sinha, 2013, p. 71). However, finding relevant data to evaluate the consumption in developed countries is difficult. Only few surveys, like the Consumer Expenditure Survey in the US, deal with consumer spending, yet, direct linkage to consumption is lacking (Attanasio & Pistaferri, 2016, p. 6). The connection between spending and consumption is weak because of the following four problematic reasons (Attanasio & Pistaferri, 2016, p. 6): (1) the data about expenditure does not exactly reflect upon durables purchased during one period, (2) consumption can be received through friends, family, charities and the government and can therefore be not considered expenditure, (3) some consumption happens at home without any kinds of spending like child care by siblings, and (4) prices change over time and happen to be different in certain areas, however the expenditure survey assume that every household faces the same prices.

This chapter deals with several influences that we deduced from the literature and from which we acknowledge to be relevant in this case. Yet, as part of critical reflection, we confess that other authors define different sets of influencers. For instance, Ogbeide (2015, p. 337) illustrates six components that interact with each other and thus, assess whether a product or service is worth being consumed. These influencers are motivation and involvement on a personal level, social demographics, knowledge, attitude, perceived risk, and risk reduction strategy. Nevertheless, the prevailing influences on consumption are income (Panagiotis, 2009, p. 3; De Mooij, 2003, p. 184), education (Lutz, 2012), health (Panagiotis, 2009, p. 3), and culture (Soares, Farhangmehr & Shoham, 2007, p. 283; Solomon et al., 2013, p. 529).

We agree with De Mooij & Hofstede (2011), who say that the general idea of decision-making refers mostly to Western consumers, where fundamental decision-making models became an inherent component of the process (De Mooij & Hofstede, 2011, p. 188). This also includes a certain degree of rationality and consciousness towards brands on different price and quality levels. Nevertheless, De Mooij & Hofstede (2011) also acknowledge that literature about an overall model that includes different decision-making styles across several cultures is scant, paying much less attention to rationality, i.e. maximizing the utility, because this mindset is increasingly regarded as unrealistic. (De Mooij, 2003, p. 184; De Mooij & Hofstede, 2011, p. 188).
2.2.3. Centered Perspective on Germany

The point of departure for us was to consider Germany as the baseline for the research and as benchmark, because of reasons such as the high education level and total R&D spending. To find suitable countries that could be analyzed alongside Germany in terms of FI, differences among these countries are important to consider. In our composition, we followed the assumption that countries of Western Europe are considered developed and in accordance to German Society of Country Lore (n.d.), the following nine countries are considered Western Europe: Austria, Belgium, France, Germany, Ireland, Luxembourg, Netherlands, Switzerland and the United Kingdom. Moreover, even though other countries were analyzed we had to exclude them because of reasons of incompatibility and lack of time to deepen our research into several directions.

Income

Following the Keynesian idea of economics, one of the main determinants of consumer behavior is income (Friedman, 1957, p. 3; Guesalaga & Marshall, 2008, p. 414). Income is completed by other macroeconomic variables such as taxes, interest rate, inflation and public expenditure, which all have impacts on the amount of money spent or saved (Panagiotis, 2009, p. 3). We follow the idea of Friedman and respect income to be a major determinant on consumption behavior. Another interesting consideration was found in the article by Jappelli & Pistaferri (2010), who investigated income changes and the according response in terms of consumption. While citizens of developed countries like Germany generally become richer (Mallien & Häring, 2016), purchasing power in those cases is therefore affected positively. Still, many other factors that directly or indirectly influence the amount of money available for spending are to be considered and should be further researched.

Income as a sub-concept is incorporated in the Human Development Index (HDI), published by the United Nations Development Programme on a yearly basis (UNDP). Implementing the HDI ranking of the nine countries treated as Western Europe, the HDI scores are between 0,855 (Austria, ranked #23) and 0,930 (Switzerland, ranked #3). Significant differences between both countries representing the highest and lowest, can be seen in terms of income. While people in Switzerland earn $56,431 p.a. on average, the same parameter states $43,869 p.a. in Austria. This amount of money is on an equal level, compared to our chosen baseline Germany ($43,919). The concept of frugal innovation is a common issue in emerging countries, as explained already. Despite the fact that income levels in Germany are by far higher compared to these countries, we see income inequality in Germany as challenging obstacle. Therefore, in the next chapter we will deal with an identification of poor people in that might be in need for FI (Fuchs-Schündeln, Krueger & Sommer, 2010, p. 104).

R&D Spending

Discussing research and development spending per country, Germany shows the greatest investment in R&D in Europe, with highest amounts in the field of automotive sector (Greive, 2017). These spending’s are combined numbers from singular spending by all resident companies, universities, government laboratories, etc. The R&D spending in Germany in 2015 resulted in $99.8bn, which is around 2.88% of the Gross Domestic Product in 2015 (OECD, 2016). In terms of total spending, the figure of money spent is the fourth highest in the world after United States of America ($462 billion), China ($376 billion) and Japan ($155 billion). With a total of around $100 billion, Germany contributes 30% of the total spending on R&D from all 28 member
states of the European Union with combined sum of $344 bn. In terms of R&D spending within countries of the European Union in terms of percentage from GDP in 2015, Germany is ranked #5, after Sweden (3.26%), Austria (3.07%), Denmark (2.96%), and Finland (2.9%). The average of EU member states is significantly lower at 1.95% from GDP. What we infer from these numbers is, that Germany is generally an appropriate market in terms of investigating chances for entrepreneurship, innovation and thus, FI. Moreover, governments play an important role in terms of promotions of innovation and entrepreneurship (Fuerlinger, Fandl & Funke, 2015, p. 7). We confess, though, that a country’s R&D spending is not a direct indicator for the success of innovations in general, but it shows that Germany regards innovation as very important for further development of the country’s welfare and economic power. Furthermore, a country's R&D spending can lead to increased competitiveness (Eurostat, 2015), which is an indirect advantage of innovation as mentioned earlier. As innovation is an “act that endows resources - things in nature with economic value - with a new capacity to create wealth” (Fuerlinger et al., 2015, p. 8), the social and economic implications of innovation is more prevalent than technical.

**Education and Health Care**

Referring to the HDI, education in terms of expected years of schooling at birth and the mean years of schooling allegorize important determinants for the state of development of a country. As we can see from the provided data, education standards do not differ in great amounts between the earlier mentioned Western countries. While expected years of schooling (16.5 years) is amongst average in the first 30 ranked countries in the HDI, the mean years of schooling (13.1 years) is the highest score in the whole assessment (UNDP, 2015, p. 208-211). Looking at the total numbers of students in Germany, in 2015 a total amount of 2,76 million university students were registered (Federal Office of Statistics, 2017). This merit indicated that the number of students receiving higher academic education has increased, and in turn serves as a good prerequisite for entrepreneurial activities in the field of innovation. Accordingly, Fuerlinger et al. (2015, p. 15) state that making entrepreneurship accessible to students is a challenging endeavor. However, the university landscape in Germany has seen a structural shift and the implementation of quality measures to raise awareness of the field of entrepreneurship in times of globalization and in turn digitalization. Exemplifying, there is a program called ‘EXIST’ that facilitates a working network between universities and its students, with service companies and financiers to foster university spinouts (Fuerlinger et al. 2015, p. 18; Federal Ministry of Economic Affairs and Energy, n.d.). Its aim is to improve entrepreneurial environments and to increase the probability of success of start-ups, while driving entrepreneurial spirit and culture at universities forward. Referring to the HDI, an additional year of schooling and education can thus be considered investment in human capital as it increases future working productivity and income (Wößmann, 2003, p. 239). Although this concept is theoretically possible and sounds valid, we would like to add two points of criticism: First, the quality of the education system must be considered (Jamison, Jamison & Hanushek, 2007, p. 772), and second, the human capital raises differently, according to the year of schooling referring to a person’s first or later year (e.g. 17th) of schooling (Wößmann, 2003, p. 249).

Therefore, we state that the innovative entrepreneurial activities in Germany are ideal because of the educational support from universities and its rising number of students.
Concerning the health care system, every citizen in Germany is obliged to be insured either through national health insurance or private health care. As Panagiotis (2009, p. 3) states, the development of the health care system is negatively linked to private expenses in personal health. A European comparison of different national health care systems also refers to boundaries of each system, i.e. limited coverage and the need of adaption to the environment which makes it less comparable (Van Mosseveld, Brückner, & Van Son, 2000). The comparison of health care activities also does not show important differences, which is why we will not explicitly focus on this sector, yet keeping the general importance in mind.

Culture and Values
Generally, culture guides human behavior, but specific emphasize for our research is put on consumption choices rather than making assumptions without consideration of the cultural context (Soares et al., 2007, p. 283; Solomon et al., 2013, p. 529). In other words: culture is the lens through which consumers regard products and to justify their behavior. Moreover, culture, as a critical concept to the common understanding of consumer behavior is generally thought of as “accumulation of shared meanings, rituals, norms and traditions, which distinguishes members of one society from another (Yeganeh, Marcotte & Bourdeau, 2010, p. 149)”. Special focus lies on values, even though it is known to be intangible and abstract in nature. Many definitions respect values to be at the heart of culture by meaning desires and trans-situational goals, that serve as basic guidelines in the life of a person within one cultural group (Yeganeh et al., 2010, p. 149; Solomon et al., 2013, p. 529; Luna & Forquer Gupta, 2001, p. 48).

Hofstede (2001) identified five distinctive dimensions that should be interlinked to detect a culture and to differentiate it from another. These dimensions are as follows: power distance, individualism, masculinity versus femininity, uncertainty avoidance, and long-term versus short-term orientation. According definitions for each dimension can be found on the homepage of Geert Hofstede (Hofstede, n.d.), however they will not be further elaborated in our thesis. Based on the cultural dimensions from Hofstede, we created cultural webs for each of the mentioned nine countries that we define as being developed and located in Western Europe. These can be found in Appendix 4. As we see, the shapes are looking different in most of the cases, though Switzerland and Luxembourg both show similar shapes in comparison to Germany. However, even though the form of the shape is similar, differences amongst several dimensions are rather significant. Accompanied with the standards laid down in the HDI led to exclusive focus on Germany due to reasons of lacking comparability with other countries.

Wealth Distribution in Germany
Maybe most appealing in this country comparison is a phenomenon that is also applicable in other countries, i.e. rising or stagnate gaps between poor and rich parts of the population (Mallien & Häring, 2016). Accordingly, while income levels are generally on the rise in Germany, the gap between the two segments (poor and rich) is above Euro zone average, thus both segments have different benefits of rising income levels. Per Mallien & Häring (2016), the richest 10% of the people own combined more than 60% of the German net assets, while the lower half of the population only owns 2.5%. For decades, Germany was known for its strong ‘Mittelstand’ (middle class) which counts for a large group of population situated between rich and poor people (Fuerlinger et al., 2015, p. 18). However, recent development has presented shifting in
terms of income distribution with a smaller middle class population. In 2013, the middle class consisted of 54% of the total national population, a difference of eight percentage points (62%) in 1983 (Spiegel Online, 2016).

The following figure illustrates the criteria for Germany to be considered in our research:

![Developed Market Criteria](image)

<table>
<thead>
<tr>
<th>Developed Market Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>High per capita income</td>
</tr>
<tr>
<td>High educational standards</td>
</tr>
<tr>
<td>Large R&amp;D spending in general</td>
</tr>
<tr>
<td>Cultural determinants</td>
</tr>
</tbody>
</table>

Figure 8. Criteria for Germany to be considered in our research

We have now illustrated that Germany is a suitable economy for further research as we expect promising results from investigation of this market. Different combined market characteristics make Germany a good baseline for future research. Not only that Germany is suitable in economic dimensions, however, as the approach of our thesis is to analyze the state of application of FI in developed markets, Germany also represents large amounts of people that live below the poverty line and can thus be considered potential customers for frugal innovations. This will be further discussed in the following chapter.

### 2.2.4. Bottom of the Pyramid in Germany

**Bottom of the Pyramid**

The phenomenon around the bottom of the pyramid and its term has first been mentioned by the U.S. President Franklin D. Roosevelt in 1932 who talked about the people of the bottom of the pyramid being of indispensable economic power that need to be exploited (Bharti et al., 2014, p. 170). However, Prahalad as the pioneer of the term and its movement (Karnani, 2007, p. 90) illustrated the ability to generate income as well as the distribution of wealth in a pyramid (Prahalad, 2005, p. 4-5). Looking at it from the top-down perspective, the peak shows the wealthy class of population, accounting for around 100 million people that have many opportunities to generate income, whilst the bottom of the pyramid represents around 4 billion people who live on less than $2 per day (Prahalad, 2005, p. 4). Inconsistently, other authors engaged in this topic and specified the number of people being part of the BoP slightly different. Kahle et al. (2013, p. 220), for instance, set the number of people in the BoP to be 3 billion people, whereas Collier (2007) refers to 5 billion people who live in developing countries and can be accounted to that group.

The rapid economic growth in these countries has fostered the emergence of a new middle class which is interested in affordable and simple technology solutions and products (Karnani, 2009, p. 7). The notion that FI are solely connected to the poorest citizens within emerging markets is therefore not without criticism. Additionally, assuming the presence of FI only in developing markets could not be justified through literature search, as they often refer to low and middle class customers (Karnani, 2009, p. 7).
However, the bottom of the pyramid is not a new phenomenon and has been a component of many research studies that appear under different names as in bottom billion, subalterns, the next billion or even subsistence marketplace (Bharti et al., 2014, p. 171). Though, the main factor that is known to impute people to the bottom of the pyramid is poverty, several of the following characteristics apply to this population group also: lowness of income, geographical dispersion, high level of diversity, heterogeneous culture, poor infrastructure, lack of education, low or lack of affordability, lack of availability (Bharti et al., 2014, p. 172). Conveying from this, the population of the bottom of the pyramid is thus in interdependency between dependence, helplessness and deprivation (Bharti et al., 2014, p. 172).

According to Piacentini & Hamilton (2013, p. 398), poverty is a global concern, not only present in developing countries but also in developed countries and involves consumers around to world to suffer from its consequences. For instance, developed countries have been in an economic and financial crisis that led to a decrease of gross disposable income not only in the US but especially in European countries (Angot & Plé, 2015, p. 3). Though, unsurprisingly developed countries are more and more struggling to provide basic services and products in a sustainable way to all their citizens (Bhatti & Ventresca, 2013, p. 10). These insights can be tunneled further by Angot & Plé (2015, p. 3), Hossain et al. (2016, p. 137) and Piacentini & Hamilton (2016, p. 137) who call attention to the possibility of these top-of-the-pyramid countries likely having their own bottom of the pyramid population.

**BoP in Germany**

To our understanding, a bottom of the pyramid has not yet been defined for the German market as well as the application of frugal innovation as a strategy to address the BoP (Simula et al., 2015, p. 1). According to Piacentini & Hamilton (2013, p. 379), the BoP includes people with a shortage of income resulting in poor living or also called work poverty that is added by Kahle et al. (2013, p. 223) who mentions those consumers relying on everyday wages and low access to credit. Deriving from the work of Simula et al. (2015), Khan (2016), Bhatti & Ventresca (2013) and Piacentini & Hamilton (2013), we thus assume that there is in fact a bottom of the pyramid for Western countries which we would like to define for Germany to be able to move forward with our research.

Since Prahalad (2005), Karnani (2007) and Kahle et al. (2013) define the population of the pyramid levels based on their daily income, a similar approach will be used to detect the bottom of the pyramid for Germany. Mentioned earlier, poverty is the main factor why people can be classified to the lowest level of the pyramid. Every country, especially the ones belonging to Europe, have poverty thresholds that define whether people live in poverty or not, that will be used to define the bottom of the pyramid. The poverty threshold in Europe is measured in relation of the median living standard, hence living standards of poor people in developing countries cannot be compared to poor people in developed countries (Inequality Watch, 2012). This means that people who earn less than 60% of the average income of the mentioned countries can therefore be accounted as poor (Inequality Watch, 2012).
As outlined, one unifying definition for poverty threshold does not exist, due to incomparable standards. In context of Germany, we evaluated the data available on official governmental databases, therefore we could conclude that the income poverty line for the German population accounts for less than €11,840 per year after taxes that in turn are €986.67 disposable income per month (Federal Office of Statistics, 2016). Knowing that Germany's share of population accounts for approximately 81.2 million people, it's percentage of poor people that can be classified to this section are 16.7% according to Eurostat (2016). Therefore, the total number of poor people that would make up the bottom of the pyramid in Germany make for around 13.56 million people.

Considering the consumption of the people who can be grouped in the bottom of the pyramid especially in developed countries, consumption behavior is limited mostly due to financial reasons, and social exclusion becomes a reasonable threat (Pervez et al., 2013, p. 55; Piacentini & Hamilton, 2013, p. 398-399; Missimer et al., 2016, p. 33; Khan, 2016, p. 1).

The 3 to 5 billion poor people from developing countries are known to have a $5 trillion purchasing power parity with just a daily income of $2 per day (Hammond et al., 2007, p.9). Two critical things that need to be considered in this context are mentioned from Guesalaga & Marshall (2008, p. 413): First, purchasing power does not reflect the actual amount of money people spend from their income and second, the indicator does not show how consumers spend their money and on what products. Although, the objections regarding purchasing power for the bottom of the pyramid are reasonable, we would like to include the number of people that will illustrate the BoP in Germany but not their purchasing power since we endorse and support the stance of Guesalaga & Marshall (2008).

In times when the Western world looks to Eastern countries, especially developing countries in regard to new ideas and innovations, FI could provide functional solutions by applying less resources that can be implemented in developed countries as a means to minimize cost and to maximize profit in a recent recession (Bhatti & Ventresca, 2013, p. 19). Hence, looking at the number of people that were identified to be of the bottom of the pyramid in the Germany (approximately 13.56 million people), firms can see opportunities for future new markets arising in Western countries. These may occur from a smaller number of people (compared to the 3 to 5 billion in developing countries) but are providing a higher income, thus there is a new potential chance for
businesses in innovation management, especially FI (Khan, 2016, p. 7). This perspective is also supported by Karnani (2007, p. 90-91), stating that MNCs should be the organizations leading this change by selling to the poor to not only receive new means for profitability but also to eradicate poverty resulting in a win-win situation. Thus, an examination and evaluation of the market of the bottom of the pyramid in Germany could be the first step to identify not only new streams of revenues in the form of new business opportunities but also a step into sustainable business models, products as well as investments (Hammond et al., 2007, p. 5). Adding to that, tapping into the BoP market will also raise the level of competitiveness of firms simply by learning to use and adapt hybrid technologies, lean management methods, market development, collaborations with the public sector and new ways of distribution and logistics under the consideration of drastic price changes (Prahalad, 2012, p. 12).

2.2.5. Summary and Conclusion of Developed Countries and BoP
As a conclusion for this section, part of our purpose is to identify potential unserved markets in developed countries, where the level of income is far above average compared to emerging markets. As well as, where the educational standards and R&D spending are high, and where cultural determinants are fundamentally different from countries that are geographically and economically located within emerging markets. We distinguish between developed and developing countries, because the aim of our thesis is to investigate if FI is a valuable means for BoP customers in developed countries, while this concept has previously been only applied in developing markets. On a market level, characteristics to determine the degree of development of a country have been demonstrated, following to great extents the Human Development Index from the United Nations Development Programme.

We also argued for why the study will solely focus on Germany. In summary, the R&D spending of German companies, institutions and the government is combined the highest in comparison to other countries of Europe, which was generally our scope. Moreover, education, health system and income also score high in the country comparison. By following cultural dimensions from Geert Hofstede, we also investigated a country’s culture and values. The focus on Germany allows us to delve deeper into the specific market context, to be able to add to an existing theory for other researchers for applying this study to other countries and other contextual factors.

Through extensive literature review, we generally saw that frugal innovation strategies could also be valuable means for the BoP in developed markets (Soni & Krishnan, 2014, p. 31; Knorringa et al., 2016, p. 144; Khan, 2016, p. 7). We therefore used data from the German Federal Office of Statistics to find both level of income to be labeled as BoP and number of people situated close or below this poverty line. As we are studying the concept of frugal innovation in and for developed markets, the illustration of the potential customer base is mandatory.

2.3. Theoretical Framework
The section is concerned with the connection of the singular earlier introduced concepts of this thesis. The following figure illustrates the preliminary framework that we created based on the theoretical findings through the literature review.
Figure 10. Framework of frugal innovations in context of developed countries

The illustrated framework is in line with the purpose of our thesis and the research question. It demonstrates and connects the individual concepts that were discussed and reflected upon our literature research. Thus, it enables to understand how relevant FI are in developed countries while these have a specific BoP, based on certain criteria like income levels or R&D spending. The second question can also be found in the framework as it plans to find answers about characteristics that need to be adapted, added or are not necessary in the context of developed markets.

We have already outlined in the thesis that benefits resulting from entrepreneurial motivation can be of different nature, social and economical and even environmental. However, the core of this research is to see an economic-driven opportunity through serving the BoP with potential previously neglected customers. The social inclusion, however, will not be neglected but will accompany through a final evaluation of frugal innovation in terms of the created value.

The framework also incorporates the concept of entrepreneurship as it deals with the recognition of opportunities and the exploitation to create value (Carland et al., 1984, p. 354; Shane & Venkataraman, 2000, p. 218). We therefore see a clear linkage between entrepreneurship and frugal innovation. The evaluation of the created value, which is illustrated at the end of the process in the framework, can also be seen as motivational factor for entrepreneurs and therefore be the initial point of departure. In this context, we refer to Parrish (2010), who argues that entrepreneurs can be of twofold nature, either opportunity-driven and therefore with deep motivations in making profit, or sustainability-driven with personal motivation to contribute to sustainable development with profits being considered secondary (Parrish, 2010, p. 510).

As a last element throughout the process, four requirements, namely acceptability, awareness, affordability and availability (4A’s), are illustrated that need to be considered when achieving success at BoP markets (Khan, 2016, p. 6; Anderson & Billou, 2007, p. 15-16; Esko et al., 2013, p. 231; Pansera, 2013, p. 471). We follow this assumption as we consider all four of them to be relevant. However, the framework enables us to analyze if some are superior to others, which contributes practically as implication for managers. While these 4A’s increase the probability of success, we
complete the framework through reference to potential failure of the innovation. Yet, this potential failure could be investigated through future research, as it would go beyond the scope of this thesis.
3. Research Methodology

This chapter is concerned with a reflection on the chosen literature and we will argue for the philosophical stances that guide our research. Second, we will demonstrate the research approach, the research design and strategy, which are then accompanied by addressing the data collection technique and the interview guide.

3.1. Reflection on the Choice of Literature

In this section, we describe the used tools in our approach to find relevant literature that supports our study.

To be able to demonstrate a thorough understanding of what has been done before and to base potential deficiencies in some way, the literature review is a means to identify relevant theories in the field of study (Lee & Lings, 2008, p. 80; Easterby-Smith, Thorpe & Jackson, 2012, p. 102; Collis & Hussey, 2014, p. 76). Also, as suggested by Hart (2001), “a thorough critical evaluation of existing research often leads to new insights by synthesizing previously unconnected ideas (Hart, 2001, p. 2)”. Accordingly, and due to the limited amount of available literature, the term ‘frugal innovation’ was handled by its singular concepts, innovation and frugality, and searched separately. To increase the number of search results, we also searched for ‘no-frills’, ‘good-enough innovation’, etc. Though, the detected literature on frugal innovation, especially in the context of developed markets remained scant, since these two concepts have not been connected in depth, previously. Furthermore, other concepts such as frugal business model innovation and innovation types could have been added to the literature review on frugal innovation. Nonetheless, it is considerable that this study is of exploratory nature and the review has been done before the study was conducted. Moreover, the scant amount of literature calls for exploration rather than theory testing.

Choosing the appropriate and relevant literature is important. Accordingly, literature must focus on the particular context and refer to the chosen field of study (Hart, 1998, p. 19). We have mainly used peer-reviewed articles in our literature review, accompanied with well-referenced books. Furthermore, we used published reports, e.g. from Unicef, OECD or United Nations Development Programme to describe the specific market conditions in developed and developing countries. In order to portray the bottom of the pyramid in Germany, we draw upon publicly available data from Eurostat and the Federal Ministry of Statistics from Germany. In general, we have critically reflected upon the existing literature and the presented tables (tables 1 and 2) show the in-depth search for literature to support our conclusions.

Due to the novelty of the FI concept, several working papers were found during the literature search (e.g. Bhatti, 2012; Karnani, 2009). We decided to incorporate them as they often present a specific coherence to the concept of frugal innovation. In general, we searched for literature on the databases Business Source Premier (Ebsco), Emerald Insight and the Umeå University Library Database. We tried to focus on most recent articles as the topic is generally changing rapidly but also incorporated established literature that is often cited and therefore relevant to the issue of frugal innovation. References made in scientific papers were traced back to find the original work since the reference itself justifies the appreciation of the article. We also used the indication of Google Scholar to validate the amount of recitations of the original work and decided to use or withdraw a certain article accordingly.
3.2. Philosophical Standpoints

The following sections are the combined approach in terms of chosen philosophical standpoint that guides the study. As the purpose of our study is the development of new knowledge, the research philosophy is a crucial determinant to be defined in terms of the nature of knowledge through ontology, epistemology and axiology.

Ontology

The nature of social reality origins from ontological assumptions that one holds as researcher (Collis & Hussey, 2014, p. 47; Quinlan, 2011, p. 95; Saunders, Lewis & Thornhill, 2009, p. 110; Long et al., 2000, p. 190). For our work, we take the subjectivist view instead of the objectivist view since we believe that every person has their own sense of reality and that there is a variety of realities (Collis & Hussey, 2014, p. 47) and that people rather than external factors or objects determine this reality (Easterby-Smith et al., 2012, p. 23). In accordance, we believe that the nature of reality is of social constructionism character, meaning that the motivation of social actors needs to be understood in order to comprehend their actions (Saunders et al., 2009, p. 111). Since we want to discover if there are frugal products/services at play in the German market and how firms think about these products and the market that is relevant, we see this reality as socially constructed. In this regard, Saunders et al. (2009, p. 111) mention that organizations put different interpretations on situations as a result of their own view of the world and how they see their own reality that influence their actions and social interactions with others. On the contrary to the interpretivist view, the positivist view incorporates an objective and external ontology, that is not influenced by individuals (Long et al., 2000, p. 190; Saunders et al., 2009, p. 119). This perspective does not suit our needs in that regard, as we believe reality to be influenced and created by social interactions that is represented by the interpretivist standpoint.

Epistemology

Epistemology deals with the general concept of knowledge and what we, as researchers regard as acceptable knowledge (Collis & Hussey, 2014, p. 47; Bryman, 2012, p. 27; Saunders et al., 2009, p. 112). According to Bryman (2012, p. 27), one issue of particular interest is whether the social world can be studied alongside the same principles as the natural sciences. Therefore, we quote Easterby-Smith et al., saying that epistemology “is about different ways of inquiring into the nature of physical and social worlds (Easterby et al., 2012, p. 21)”. In line with our research question and according to the chosen subjectivist ontological standpoint, we adopt the view of critical realism for this study. Thus, we decided to settle our epistemological view within the continuum of positivism and interpretivism (Collis & Hussey, 2014, p. 43-44). Positivism in the epistemological sense is originated in the natural sciences and applies similar practices from this field (Saunders et al., 2012, p. 678). These practices are based on the assumption that the social reality is objective and not affected by investigation of it in form of a ‘closed system’ (Collis & Hussey 2014, p. 43; Morgan & Smircich, 1980, p. 493). Though, we conduct research in the field of social sciences, personal motivations and opinions play an important role which impedes accurate measures in a closed system that is why we do not adopt this stance. Interpretivism, as the other side of the continuum, incorporates the approach that sees social reality affected by investigation and as subjective entity in people’s minds, denying the possibility of causality (Collis & Hussey, 2014, p. 44; Saunders et al., 2009, p. 116; Bryman, 2012, p. 28; Gummesson, 2003, p. 482; Easton, 2010, p. 118).
Though, one could critically argue, that the interpretivist viewpoint would be suitable for our research study, because we delve into the social world and we aim to acquire new knowledge by deep-level investigation of frugal innovation (Blumberg, Cooper & Schindler, 2011, p. 144). Nevertheless, we adopt the critical realist view based on the work by Easton and acknowledge that “the world is socially constructed but not entirely so (Easton, 2010, p. 120)” and that “the ‘real’ world breaks through and sometime destroys the complex stories that we create in order to understand and explain the situations we research (Easton, 2010, p. 120)”. This notion is accompanied by Easterby et al. (2012, p. 29) who refer to the interdependent influence of the social life on people and vice versa. Examples for the real world that breaks through in the context of FI can be seen in laws and regulations, or contextual factors like educational standards that influence both innovators and potential customers.

The realist standpoint is generally close to the assumptions of positivism, as both make use of scientific approaches to create knowledge (Saunders et al., 2009, p. 114). However, realism can be split into two separate sub-concepts which illustrates the clear meaning of this philosophical view. First, direct realism refers to what one sees is really the reality (Saunders et al., 2009, p. 114). Therefore, personal experiences are held as reality without deep mental evaluation by the person, which makes this perspective applicable in the natural sciences to achieve accurate and controlled measures (Easton, 2010, p. 120). On the contrary, critical realism, the approach we adopt, generally respects causality as potential (Easterby et al., 2012, p. 29). Critical realists take into account that personal senses deceive us in the way how we see things and encourage a person to mentally process experiences (Saunders et al., 2009, p. 115). In other words, what we see and experience are images of the things on how we perceive them, yet not the things themselves. We believe the critical realist view to be more suitable because the world is dynamic and constantly changing due to social interactions, e.g. between founders, customers and the society at large.

**Axiology**

According to Saunders et al. (2009), Axiology is “a branch of philosophy that studies judgements about value (Saunders et al., 2009, p. 116)”. Thus, authors select the topic based on their interest and background and decide what role their values play in their research. This view is supported by Heron (1996, p. 11-12), stating that values direct actions and should be a fundamental part in one’s research since they do not only balance but also complement the other methodological standpoints like ontological and epistemological views about the nature of reality.

Talking about our axiological standpoint, we agree that our background and values are likely going to influence our research. There are several reasons for this: First, both of us study business development, meaning that a huge component of our studies was the aspect of innovation, contributing to our knowledge base about entrepreneurship and innovation as determinants for the choice of research subject. Furthermore, we want to analyze the concept of frugal innovation in the German market. Accordingly, we also admit, that we picked this direction because of our personal background. Both of us were born and raised in Germany, thus our knowledge about the market as well as culture could give us an advantage in attending this direction.

We confess that our personal opinions and believes as researchers and social beings will inexorably guide our research. This might be seen in a more subjective manner in terms
of our undertaken actions and interpretations of the collected data. Even though these preconceptions will most likely influence our research as it was already influencing us when deciding for the topic, we tried to be objective in a most possible way to produce authentic study results. An objective manner is important to be able to follow our research method in understanding our participants since we highly value their attendance, knowledge, values as well as experience and feelings and thus, contribute to the literature. We tried to be restraining when choosing upon research approach and design, and data collection techniques to enable the best possible outcomes. Even though, our personal perceptions throughout the process of this thesis were impacting, we still tried to limit the influence of our preconceptions to not negatively influence the quality of our thesis.

3.3. Research Approach

In this chapter, we talk about the research approach that decides whether the nature of our research is of theory testing or theory building/extending character.

As mentioned earlier, the aim of our study is to evaluate whether frugal innovations also occur and are applied in developed countries, hence recognize an economic-driven opportunity for firms. Furthermore, we would like to determine necessary product characteristics based on the criteria we deduced from literature about emerging markets and in turn aim to revise our preliminary framework. However, as the concept of frugal innovation in the context of developed markets has previously not been sufficiently researched, our approach cannot be of deductive nature. Hence, we adopt the inductive approach, which will be explained in the following. As stated by Strauss & Corbin (1990, p. 36-38) the research questions dictate the method and refer to the phenomenon under study, which also applies in our case because the exploratory nature of ‘what’-questions calls for inductive reasoning.

Inductive reasoning works to generate theory from the observations using several research methods (Mantere & Ketokivi, 2013, p. 71; Collis & Hussey, 2014, p. 7). This theory-creating strategy (Edmondson & McManus, 2007, p. 1166), which we use as theory-extending strategy, is more appropriate for our study as we cannot validate quantifiable data or justify previous hypotheses due to the novelty of the concept. We also ask open-ended questions and in the course, analyze patterns to form themes (Creswell, 2014, p. 66).

Deductive research approaches, on the contrary, begin with scrutinizing the theory and the generation of a hypothesis that then will be tested in experimental situations (Easton, 2002, p. 104; Edmondson & McManus, 2007, p. 1166; Collis & Hussey, 2014, p. 7; Creswell, 2014, p. 59). Consequently, deductive reasoning takes rules and explanations as premises and draws conclusions based on the general (Mantere & Ketokivi, 2013, p. 71). This approach finds primarily use in the natural sciences, following the positivist philosophical viewpoint (Saunders et al., 2009, p. 124), from which we steer clear of in our research. Therefore, we avoid a purely deductive approach for our work based on the inherent predisposition that rigid methodology in a closed system does not allow for alternative explanations (Saunders et al., 2009, p. 126).

Yet, one could argue, that we do not test hypotheses deduced from the theory, i.e. follow a deductive approach, nor do we develop a fundamentally new theory based on the empirical data we collect, i.e. applying inductive reasoning. It could therefore be
considered abductive, whereby “theories are used to guide observation that further specifies the theories” (Van De Ven & Poole, 2005, p. 1384”). In this approach, the researcher moves back and forth between inductive and deductive elements (Suddaby, 2006, p. 639; Dubois & Gadde, 2002, p. 556; Bryman & Bell, 2015, p. 26). In this regard, we acknowledge that our research approach may not be purely inductive, but also incorporates deductive elements like the revision of the deduced product characteristics. Consequently, we do not apply abductive reasoning, as inductive and deductive elements are not equally balanced. Based on the purpose of this thesis, i.e. analyzing an established concept in a different environment and extending a substantive theory upon this analysis, the approach we adopt is more inductive. Yet, determining characteristics based on concrete product examples found in the literature and examining them in the German context has a deductive character. Generally though, as we believe that the world is socially constructed, i.e. adopting a subjectivist ontological stance, the chosen research approach must be in line (Collis & Hussey, 2014, p. 47), which underpins our choice for an inductive data collection strategy.

3.4. Research Design & Strategy

In the following, we elaborate our decision for our chosen research design.

Generally spoken, research design can be separated in three distinctive forms, namely quantitative, qualitative and mixed-method approaches (Lund, 2012, p. 155; Saunders et al., 2009, p. 151; Creswell, 2014, p. 17). The choice of a certain research design depends on the nature of the research and must be in line with how researchers take stands in terms of research philosophy (Bryman, 2012, p. 35; Lund, 2012, p. 155). Accordingly, the research design is settled along a continuum ranging from qualitative and subjective approaches to objective and quantitative approaches (Long et al., 2000, p. 190). In line with the purpose of our study, i.e. exploring the state of frugal innovation in Germany, we adopt a qualitative research design.

The rawest way to distinguish quantitative and qualitative research is the focus on numeric data or nonnumeric data (Collis & Hussey, 2014, p. 52; Braun & Clarke, 2013, p. 4). In respect to the according philosophical standpoints, quantitative research refers to the principles of positivism, i.e. rigid research methodology, whereas qualitative research is connected to subjectivism in the field of social sciences (Adams et al., 2007, p. 26). Incorporating both statistical and textual analysis, the research design would be following a mixed-method design approach (Creswell, 2014, p. 17). More precisely, quantitative research methods are suitable when objective elements are the focal point of the study that are strictly investigated in a closed system in terms of deductive and objectivist studies (Collis & Hussey 2014, p. 43). On the contrary, subjective studies rather call for qualitative approaches in which personal opinions of people play a key role in an exploratory research environment (Bryman & Bell, 2011, p. 386; Saunders et al., 2012, p. 163). A qualitative design is also more suitable in exploratory and inductive studies (Bryman & Bell, 2011, p. 26-27). Another aspect for distinguishing between both types of designs refers to the total number of cases and variables in a study (Saunders et al., 2009, p. 482). While quantitative data collection requires a high number of cases to justify a certain hypothesis statistically, qualitative data collection implies a higher volume of variables for conceptualization and interpretation of the data (Saunders et al., 2009, p. 482; Collis & Hussey, 2014, p. 52).
As mentioned, we adopt a qualitative design perspective instead of the quantitative research design. This can be explained on basis of the novelty of the FI concept that first requires qualitative exploration before quantitative verification. We base our decision on Lund (2012, p. 156) who states, that a qualitative design is more suitable when hypotheses are generated, in comparison to hypothesis testing, which refers to quantitative methods. The in-depth level insight that we can obtain through a qualitative design, enables us to pursue the exploratory nature of our research. We believe this design to be most suitable in the complex task to facilitate understanding of FI in the context of developed markets. The final form of our study includes first-hand perspectives from the sample participants, that undergo complex interpretation by us, in order to fulfill our study purpose. Therefore, our data collection cannot be fully standardized. Also, criticism on qualitative methods is mentioned in the way that the result is never what it was ought to be in the beginning (Goulding, 2002, p. 18). In our case, though, the notion of this criticism adds to facilitation of new understanding of the concept of frugal innovation in other contexts than emerging markets. As we have a basic assumption about the general state, we are open-minded to gather new insights from our research. We still acknowledge that finding patterns within the dataset, e.g. through counting the amount of calls for one specific answer, and the comparison of countries based on numerical data has slight quantitative elements. Yet, these do not influence our research design (qualitative), but rather contribute to the quality of our research.

We also define our research to be of cross-sectional nature, referring to the data-collection at a single point in time and in multiple cases (see 5.1.) like different people and organizations with the ambition to find mutual patterns (Bryman & Bell, 2015, p. 61-62; Bryman, 2012, p. 711; Cooper & Schindler, 2011, p. 142; Easterby-Smith et al., 2012, p. 44). This notion can also be seen as limitation for our research through a constraint in time and money.

Qualitative data collection methods can be realized through different strategies, but must be in line with the chosen philosophical standpoints (Saunders et al., 2012, p. 163). According to Creswell (2014, p. 12), five different designs (in Saunders et al. (2009, p. 108) labeled as ‘strategy’) are commonly known, namely narrative research, phenomenology, grounded theory, ethnographies or case studies. Our research design follows the methodology of GT in applying its analyzation techniques, as we aim to extend a substantive theory (Vincze, 2013, p. 171). Based on the perspectives of our study participants as required in GT analysis (Creswell, 2014, p. 14; Goulding, 2002, p. 43) the extended substantive theory will illustrate the presence and importance of frugal innovation in Germany.

Based on Glaser & Strauss (1967), who originated the concept of GT, we see the strategy of GT as “a way of arriving at theory suited to its supposed uses (Glaser & Strauss, 1967, p. 3)”. In other words, grounded theory is not about testing, but rather identifies the ‘what is’ instead of ‘what might be’ (Strauss & Corbin, 1990, p. 67). A key component of GT is the creativity to break through existing assumptions to build new ones out of the existing set of data (Strauss & Corbin, 1990, p. 27). Thus, adopting the GT analyzation techniques conforms with the application of an inductive research approach and deductive elements, which we described in the previous section (Collis & Hussey, 2014, p. 341; Saunders et al., 2012, p. 185; Charmaz, 2008, p. 397; Strauss & Corbin, 1990, p. 23). More detailed, we implement elements of the social
constructionist GT approach, which is in line with the chosen ontological standpoint of subjectivism. This can be explained by a thorough examination of our perspectives as researchers and our own reflexivity and the notion of adopting social constructions (Charmaz, 2008, p. 398). We also confessed that we as researchers are affected by the research and vice versa, which is, next to multiple realities, interactions and positions of us as researchers, a key criterion for the constructionist grounded theory approach (Charmaz, 2008, p. 402). Also, Saunders et al. (2012, p. 185) argue GT to be in between induction and deduction, which underpins our approach of having elements of both approaches. Furthermore, this notion by Saunders et al. represents that GT is in practice a mix of objectivist and constructivist stances (Charmaz, 2008, p. 402). Consequently, we look at the same concept, but include different settings, i.e. companies of a variety of industries, in our research to extend the existing theory aligned to the analyzation practice of GT (Easterby-Smith et al., 2012, p. 58). As we want to interview company representatives that are knowledgeable about frugal innovation in context of an industrialized country in order to create detailed conclusions, we believe the analyzation procedures of GT to be most suitable to pursue our aim. As our research questions also indicate their exploratory nature by incorporating the word ‘what’ (Yin, 2009, p. 9), we see the application of GT analysis as the most supportive strategy for exploring the concept of frugal innovation. However, one must critically confess that consensus about what exactly is covered by GT cannot be found (Eisenhardt & Graebner, 2007, p. 30). According to Eisenhardt & Graebner (2007, p. 30), some scholars define GT simply as identifying patterns from observations, while Suddaby (2006) states that grounded theory is “most suited to efforts to understand the process by which actors construct meaning out of intersubjective experience (Suddaby, 2006, p. 634)”. The reason why we apply GT analyzation techniques is based on the purpose of our thesis. We do not simply aim to apply a known concept in a different context, but we rather analyze the certain market through the lens of frugal innovation and derive a theory extension based on the findings in the analyzed qualitative data. We confess that the analysis of qualitative data while making use of GT techniques is very strict and mechanistic, yet we believed this to be the most suitable way for us to categorize the great amount of data. We also felt that the principles in GT and its relatively rigid procedure in what and how these steps are undertaken, guides us through the complex concept in the best possible way. Therefore, we anticipate that the application of GT methods may be questioned by others as just applying a known concept in a ‘new’ environment does not justify GT per se. Yet, criticism upon the decision to still use these techniques will be limited based on the suitability of the methodology in our special case of analyzing the German market in terms of the state of frugal innovation and to derive a theory extension on the characteristics of frugal products in that specific market setting. We have thoroughly described our research approach and strategy and offer nothing but transparency, therefore following the two core tenets of GT, i.e. constant comparison of the different perspectives and theoretical and purposeful sampling which we deal with later (Suddaby, 2006, p. 640; Glaser & Strauss, 1967, p. 45; Eisenhardt & Graebner, 2007, p. 30). Naturally, we chose to apply GT analyzation techniques before the actual data collection. However, we felt vindicated by this choice as we realized to achieve a state of saturation during data collection (Creswell, 2014, p. 189; Charmaz, 2006, p. 113), i.e. to pursue the first tenet of constant comparison of the incidents only until no new categories, properties and dimensions arise.
We acknowledge that applying analyzation procedures of GT is not without potential criticism in terms of its suitability in our thesis. Therefore, we will explain why we chose to not integrate the other mentioned research designs. Case studies, both single and multiple case studies could be a suitable approach (Yin, 2009, p. 46). Especially latter ones could fit our purpose, where “the distinctive need for case studies arises out of the desire to understand complex social phenomena (Yin, 2009, p. 4)”. However, we believe the assumption by Yin (2209, p. 53) and the scope of multiple case studies goes beyond the time and resources available by students and single independent investigators. Single case studies on the contrary create an in-depth understanding of a specific case that is bounded by its environment (Creswell, 2014, p. 14). Consequently, we do not see the applicability of this research design in our thesis because we intend to analyze the context of developed markets as a whole. Furthermore, we do not consider phenomenology as we do not analyze the personal experiences of individuals in regard to a certain occurred phenomenon (Creswell, 2014, p. 14). We can also neither use ethnography because we will not analyze any patterns in behavior, language or actions amongst cultural groups (Creswell, 2014, p. 14). Lastly, narrative research is also not applicable in our study, since we do not study the lives of individuals, i.e. the participants (Creswell, 2014, p. 14).

3.5. Data Collection Techniques

This section deals with the data collection and the method most suitable for our study, referring to the collection of primary data or making use of secondary data, if existing. We will also come to speak about our research approach, i.e. the application of interviews.

The first question researchers should ask themselves in reference to data collection is the following: “Do I really need to collect data myself or is the data that I need to answer the research questions available elsewhere (Adams et al., 2007, p. 107)”. Latter one refers to data that is collected from existing sources and based on analysis of data that has originally been collected by other researchers for another purpose (Collis & Hussey, 2014, p. 59; Bryman & Bell, 2015, p. 319; Saunders et al., 2009, p. 256; Berg, 2004, p. 237). However, we collect primary data, which is about gathering new and specific information that are aligned to the purpose of our research and help to answer the research questions (Saunders et al., 2009, p. 256). This set of data originates from the researcher’s own experiments, surveys or interviews (Collis & Hussey, 2014, p. 59; Berg, 2004, p. 237). In our thesis, we occasionally stated that the novelty of the concept of frugal innovation is generally challenging for us as researchers. This also applies in terms of data collection, as we could not find available secondary data in the context of frugal innovation and developed markets. Hence, we were obliged to gather primary data in order to be able to adequately answer our research questions and to fulfill the purpose.

In qualitative research, interviews are often used as a means for data collection. Saunders et al. (2009) state, that interviews are “purposeful discussion between two or more people (Saunders et al., 2009, p. 319)”, which helps to collect valid data according to the research question. We believe interviews to be the most suitable method for our purpose. By adopting this method, we can explore interviewees’ perspectives on FI and get first-hand insights through their arguments, stories and opinions on the concept.
In general, there are three kinds of interviews, namely structured, semi-structured and unstructured interviews (Saunders et al., 2009, p. 320; Easterby-Smith et al., 2012, p. 128;). To best fit our study purpose and to revise our framework effectively, we conducted semi-structured interviews. This type of interview involves a predefined set of questions that serve as basic guideline but may be adapted according to the course of conversation (Berg, 2004, p. 79).

In comparison to structured interviews, where the researcher sticks to a set of predetermined questions and follows each question consecutively (Berg, 2004, p. 80; Bryman & Bell, 2015, p. 211), semi-structured interviews will allow us to modify the directions of the interview while conducting it (Saunders et al., 2009, p. 320; Bryman & Bell, 2015, p. 213). Unstructured interviews on the other hand have no structure, and are conducted in an informal manner (Saunders et al., 2009, p. 320-321). Exemplifying the use of a semi-structured interview, if one interviewee disagrees with the criteria for frugal innovation that we deduced from the literature in the context of emerging markets, we can ask more specific questions in this direction to enrich our understanding of frugal innovation and characteristics for developed markets. In line with the chosen philosophical stance of subjectivism, we believe semi-structured interviews to help us address FI from the perspective of the interviewee.
4. Practical Methodology
In the following chapter, we illustrate the practical methodology adopted in our thesis. We will outline the applied data collection techniques and refer to quality criteria, before we explain our interview and analysis procedure, and illustrate ethical considerations.

4.1. Data Collection Procedure
This part is divided in three sections, dealing with the selection criteria for the firms, the presentation of participants and our interview guide.

4.1.1. Selection Criteria
Sampling is an important aspect to consider, meaning to make inferences about a large population using a small sample (Berg, 2004, p. 34). Purposive sampling is a method, that allows the researcher to identify and seek out individuals or settings where the phenomenon under study is likely to appear (Silverman, 2011, p. 388). We chose this method because it makes it possible for us to select firms based on our criteria (Silverman, 2011, p. 388) and leads to the selection of information-rich cases for in-depth studies (Patton, 1987, p. 51-52). The application of a purposive sampling method ensures a clear picture of what kinds of samples are needed to fulfill our study purpose. In addition, this sampling method gives us the opportunity to approach potential interview partners more directly after a careful evaluation of their compatibility regarding our selection criteria (Easterby-Smith et al., 2012, p. 228).

On the contrary, probability sampling approaches refer to a set of techniques, in which the probability for a specific case (company, employee, etc.) is known, yet not zero (Easterby-Smith et al., 2012, p. 226; Saunders et al., 2012, p. 678). The most common probability-sampling is ‘simple random sampling’ (Berg, 2004, p. 35). Nevertheless, as we believe that only thorough evaluation of potential cases provides the necessary information, we adopt purposive sampling to identify relevant interview partners to answer our research questions more effectively (Bryman & Bell, 2015, p. 429). We are aware, that due to purposeful choice of cases, generalizability of our results will be limited (Bryman & Bell, 2015, p. 429). Thus, the focus is on companies in the field of frugal innovation becoming eligible for our specific research aim identified through selection criteria to ensure the practicality of the cases. To get to the selection of our interviewees, we define our selection criteria as followed:

First, we evaluated and summarized characteristics of frugal innovation from the context of emerging countries for a uniform definition to be able to analyze the concept in Germany. The three main components and thus, selection criteria for firms and their products and or services are thriftiness, modesty and affordability. Hence, the products and or services of our interviewees’ firms represent these characteristics for us to be selected as interview partners to contribute to our study.

Second, by selecting interviewees, we keep our study purpose in mind, namely integrating firms that serve the bottom of the pyramid with FI in Germany. To be able to proceed in this direction we considered whether the firm we want to interview is addressing or considering the customer group of poor people (BoP) or during the interviews want to find out if they also address this segment.
Third, since we investigate the concept in the German market, we set the criteria for firms to be active in this market with their product portfolio.

Lastly, it has to be mentioned, that we integrate two types of knowledge in this context: (1) our knowledge about the concept of FI that helps us to identify and select firms that are frugal according to the provided definition, and (2) the knowledge of the interviewees about frugal innovation and the interview data that helps to fulfill our study purpose and answer our research questions.

4.1.2. Participants in the Study
All eight firms that agreed on participating in our study were chosen based on the selection criteria that we defined in the previous section. We tried to select firms from a diversity of industries and with different focus on either products or services, to be able to create a broad picture and to extend the theory (substantive theory), to contrast results and to avoid early data saturation (Creswell, 2014, p. 189). We also focused on companies within the B2C markets, as we aim to facilitate understanding about the importance of frugal innovation for people situated in the bottom of the pyramid. We confess though, that the novelty of the concept caused problems, mostly in terms of lack of understanding and missing knowledge on the side of the companies. Yet, we made the participants aware of the concept and convinced them to take part in this study, only considering companies that have already launched their product or service.

4.1.3. Interview Guide
We created an interview guide, that helped us to follow a basic structure while collecting the data. As depicted in appendix 7, the interview guide consists of two columns. The first one presents the questions we tend to raise during the interview, showing questions that we need to ask in order to answer our research questions accordingly. Additionally, optional follow-up questions for further understanding of the answers were integrated. The second column shows the intention of each question, as it helps the research study participant to get a feeling about our objectives behind the questions and thus, guides the interviewee in answering the questions.

The questions in the interview guide are based on the identified literature streams and the framework that we created (see chapter 2.4). The interview guide is organized in a total of nine blocks, from which few only serve as introduction or general section without detailed linkage to a part of the framework.

Our first block serves as an introduction for our research in which we briefly familiarize the interviewee with the study and us as researchers. The second block will then analyze the background of the participant in terms of company affiliation, engagement of the company in specific markets and the main pillars of value creation, i.e. offered products or services. The third block will then refer to the concept of frugal innovation and their general knowledge about it. One of the main questions that takes part of fulfilling our purpose (research question 1) is the question about the assessment of the state of FI in the context of Germany. Hence, the aim of this third block is the evaluation of whether the interviewee is knowledgeable about the term ‘frugal innovation’.

Proceeding, we will analyze each part of our framework and continue with block four, that deals with the product characteristics of FI (research question 2). First, we aim to justify the characteristics from examples of emerging countries and then try to
determine specific characteristics that ground in the concrete market characteristics, described in chapter 2.3.3. In the next section of our framework and our literature review, we analyze the bottom of the pyramid. As this concept is well known in developing countries (see Prahalad, 2005), the BoP in Germany is yet under-researched. Therefore, we raise questions about the existing knowledge about the BoP in general and add questions whether the participant’s company respect and consider the BoP as valuable customer group in Germany. In section six we analyze the requirements for success for frugal products at the BoP, under consideration how product characteristics feel need for adaption after the thorough consideration of frugal innovation. This part serves not only as generator for additional knowledge but also as revising previously stated answers.

Section seven in the interview guide is concerned with concluding questions about the value creation of frugal innovation. Here, the question whether the offered product contributes in a social, environmental or economic way is most important. In addition, the follow-up question (23) will lead back to question 7 and analyzes the motivational factors during product development. The eight section consists of general follow-up questions that are raised if needed, to generate an in-depth understanding of the given answers. Finally, section nine serves as completion in which we thank the participant for the participation and give him or her the chance to ask us questions in return.

To ensure the quality and suitability of our interview guide, we involved peer students to take part in a test run of an interview. The outcomes of the pilot study were good critical reflections on each question and the chance for us to revise the interview guide accordingly. This procedure of previous testing helped us to define sets of questions to answer our research questions in a more precise way. We could not make use of companies as the amount of possible interview partners was generally too low to address them twice, i.e. once for testing the guide and once for the actual interview. Yet, running test interviews also helped us to estimate the required duration as most of the participants asked for it in advance.

4.2. Quality Criteria

In this section, we deal with how we conducted our research and interviews. Trustworthiness of provided research is important in terms of literature contribution and to ensure its quality. Thus, in the following we explain the methods we integrated to be able to provide a high-quality research.

Critical reflection upon the positioning of the quality criteria in the thesis is put forward, as one could also present these issues at the end of the study. However, we felt that it would benefit the thesis better at this stage since we think that the laid down assumptions within this section benefit the reader in comprehending the next chapters. We therefore believe to enable a higher level of understanding of the conducted research, if the criteria are mentioned beforehand.

Reliable research requires the consideration of trustworthiness that can be seen in (1) credibility, (2) transferability, (3) dependability and (4) conformability (Guba, 1981, p. 84-87).
**Credibility**
There are several methods that fall under the umbrella to ensure credibility when conducting a study, e.g. during data collection. Discussing relevant aspects, we would like to mention prolonged engagement, which is a method that considers the presence of the researchers during their data collection as fundamental to be able to test and confirm their own bias and perceptions (Guba, 1981, p. 84). Due to the unavailability of firms to meet in person or the geographical distance between us and the firms in Germany, we were not able to conduct face-to-face interviews and thus, be personally present during our data collection. Regardless of our physical absence during the interviews, we can assure our contributions were not influenced by our bias and perceptions, only considering information we received during the interviews.

Next, we chose the method of triangulation for reasons of quality. Patton (1987, p. 60) expresses triangulation being fourfold in: data triangulation, investigator triangulation, theory triangulation and methodological triangulation. The first refers to the use of various sources of data, the second defines the use of singular interviewers or researchers to avoid and recognize inclination of one person, the third, theory triangulation, refers to the application of more than one perspective and the last type directs to the usage of multiple methods of data collection, i.e. observations, interviews, documents and questionnaires (Patton, 1987, p. 60). Observing the provided types, we state that our data collection method is coined by only using primary data with support of the information provided on our interviewees websites. This way we could double check in some cases if the statements of our interviewees are conforming with provided information in their online presence. This led to a quality check in assuring that provided information are in fact true and increase credibility. In line with theory triangulation (Patton, 1987, p. 85), researchers should separate and subsequently compare their different perceptions. We applied this method by working individually to get different perspectives for the bigger part of our research for later comparison. Concerning investigator triangulation, all interviews were conducted with both of us present to ensure that all questions were carried out and no information went missing. Furthermore, the presence of both of us guaranteed for the right understanding of our participants’ meanings and statements. Lastly, in line with methodological triangulation, the patterns of our interviews were of semi-structured nature that made it possible for comparison between the statements of our interviewees.

According to Guba (1981, p. 85), researchers should always use more than two sources to verify the truthfulness of its content. For instance, when defining specific terms for the course of our research, we always performed a critical evaluation, involving at least two or more sources as one can see in our tables.

Lastly, we would like to implement the aspect of ‘member checks’ during the data collecting process (Guba, 1981, p. 86), meaning that all interviewees got the opportunity to read the transcripts of their interview. This allows for the companies to give additional input or make changes in case we misinterpreted their provided information. As a remark, very few interviewees made a request for their transcript, which we provided in order for them to make any corrections. The firm representatives that received their transcript did not change anything in our provided recording for us to go ahead with the study.
Transferability
Transferability is another consideration that needs to be mentioned concerning trustworthiness of data collection. According to Guba (1981, p. 86), social/behavioral phenomena are context bound, meaning that it is not possible for statements to be applied in the general sense. We support this idea, since we believe that the representatives of the firms we are interviewing can only make assumptions about their firm, including their products and services and not about the state of application of frugal innovation in general. By keeping our selection criteria regarding our interview partner’s neap, we are open for input of firms of every industry and product category, but only considering B2C business. We believe that this aspect will increase our transferability, especially when considering that we provide background information and interview guide questions, leaving the choice of fittingness and usage by fellow researcher. However, as we noted earlier, the adoption of purposive sampling limits the general transferability of results (Bryman & Bell, 2015, p. 429).

Dependability
Concerning dependability, ‘audit trail’ provides the opportunity for external individuals to understand and process the collected and analyzed data (Guba, 1981, p. 87). We believe this to be of fundamental importance to make up an ‘audit trail’ for our data and our interpretations in form of notes, not only for external transparency but especially for our working process.

Confirmability
The aspect of confirmability ensures the objectivity of the research (Bryman & Bell, 2015, p. 403), meaning that we will try not to let our personal values and inclinations sway and influence our research findings and thus, falsifying our results. Furthermore, all our interviews were recorded and transcribed, leading to thorough analysis of provided data and presented results.

4.3. Interview Procedure
We started to approach companies (precisely 65) from mid-February onwards, as we expected to take time to identify suitable companies and to set an interview date. Instead of the general contact information, we looked for press contact information. The press department of firms seemed like the responsible contact person and likely to be the fastest to reply since they usually provide the contact person for external interviews. The very first contact with the firms was done via phone, if the telephone number of press and communications department was found on their website. If not, we used emails to make a first contact, explaining our situation and requirements. The reason why we used personal contact via phone was, that we believe it created a more reliable and trustworthy impression and it became more difficult for them to turn us down. Each phone contact was followed up by an email that contained all relevant information that we mentioned on the phone before. In this email we described our background, the research we are conducting and the purpose of our thesis that can only be accomplished by their support. Furthermore, we explained the possibility to do interviews anonymously. All emails entailed the same information.

After the firm agreed to have an interview with us, we sent a follow-up email to our participants and attached the interview guide, as it was requested by most of them. The follow-up email and the confirmation from our supervisor can be found in appendix 5 and 6. We not only guaranteed the participants’ wish to receive the interview guide in
advance, but were also convinced that the interviewee can have the chance to prepare and to think about the topic in general. Therefore, we decided to distribute the interview guide beforehand. We are aware of the possible downside of this procedure as it jeopardized spontaneous answers and somehow influences their state of knowledge about the concept beforehand. However, as we make use of several follow-up questions we believe to be still able to elicit some answers that come to the mind of the participant.

The interviews were conducted between March 1st and March 15th, 2017. We generally made sure that we did not schedule more than one interview per day, just to ensure that our concentration level is high for each interview and that a sufficient amount of preparation is guaranteed. We also decided to limit ourselves to one interview a day to ensure and block certain time for brainstorming as well as reflections and ideas on what we just heard. Yet, the interview schedule was mainly aligned according to the availability of the participants.

Interviews were generally preferred to be held via phone, as we believed them to be more efficient than Skype, in case of a sudden abort of the connection and problems with the quality of the transmission. If the participant wished a Skype call, we would have also agreed on this. We also believed that foregoing using a webcam would create an atmosphere for the interviewee within his or her regular environment. On the contrary, using Skype could also support us in grasping facial expressions and body language of our interviewees. Yet, we still believe to receive more detailed and suitable answers within an environment in which face-to-face conditions do not increase the level of tension on both sides. An overview and summary of all conducted interviews can be found in appendix 8.

In preparation for each interview, we utilized the company’s website, screened newspaper articles and used other forms of information, e.g. videos about the company, to create an overall picture about the participant’s company. We identified the company according to the criteria we described in chapter 4.1.1. However, we felt that an even more thorough impression is necessary for conducting interviews in a more professional way which is why we screened the web for background information. This was rather time demanding, yet helped us to reflect upon given answers and to cross-check data through enriched understanding about the company (Guba, 1981, p. 85). Therefore, we utilize the concept of ‘data triangulation’ (Patton, 1987, p. 60), since we interview people amongst different companies and industries. During the interviews, we make use of follow-up questions to delve deeper into certain topics, and the interview guide can generally be used in a flexible manner based on the course of the interview (Berg, 2004, p. 81). Yet, we were interested in making the interviewee answer all questions if possible. Though, some participants were limited in available time which lead to stronger focus on certain parts like section three of the interview guide, while not neglecting others, but not stressing every detail.

As we conducted interviews with company representatives in Germany, we believed it to be more expedient to carry out these interviews in German. This was done because both parties, i.e. the company and we as researchers, can fully express our ideas and insights. This procedure would clearly mean more work afterwards, i.e. translating the answers into English, yet we estimated to receive more precise answers due to
fundamental comfortability in terms of language. In order to be able to transcribe the given answers, we used a voice recording device on which all participants agreed.

4.4. Presenting and Analyzing Data

Transcribing the Interviews

In total, we conducted eight interviews (out of 65 approached firms) that resulted in approximately 5.8 hours in recordings. We performed interviews and later transcribed the spoken word to be able to find connections and patterns between the interviewees. Our transcripts contain the interviews and what was said, word by word. According to Merriam (2009, p. 175), transcripts are a good tool to gain perspectives and inklings about the collected data. Also, Alldred & Gillies (2002, p. 159-161) talk about transcripts and how not only the spoken words are important but also the way they are said like the individual speaking style and filling words. For the purpose of readability and to quote the interviewees in a suitable manner, we excluded expletives like ‘ähm’, ‘yeah’ or ‘hm’, actual words of ‘filling’ character were included. We agree with all three authors (Merriam, 2009; Alldred & Gillies, 2002) in that regard, that transcripts give an additional insight on the collected data and that it is also important how something is said.

During the process of transcribing our interviews, we realized that this task is very time consuming, especially when transcribing word by word instead of only the meaning of statements, as this is also suggested by Saunders et al. (2009, p. 485). The process included all the words said, though, we did not improve the style, grammar or language of our interviewees. In no case did we cut down or omit spoken words for the purpose of our thesis. We decided for this version of transcribing, simply because we did not want to limit and compromise our research in case we interpreted something wrong in the data collection process. This decision turned out to require more time for the transcribing process but we made this decision deliberately, to not miss important information provided by our interviewees. Eventually, we conducted the interviews in German, the mentioned interview time above derives from the German recordings. For the purpose and confirmability for our thesis however, we translated the transcripts into English, that present 72 pages and more than 39,000 words. This step of the process required additional time since we had to make sure that the provided information are comprehensibly translated and were not changed to suit our interpretations. Yet, by translating the transcript from one language into the other, we had to correct the English transcripts in the right grammatical manner. Another thing that needs to be mentioned here is that we tried to translate words that only exist in the German language with descriptions or close synonymous words that exist in the English language. To ensure the data quality after translation, we double checked ourselves and exchanged and compared our results with each other.

4.5. Considerations of Ethical Research

“Researchers need to protect their research participants; develop a trust with them; promote the integrity of research; [...] and cope with new, challenging problems (Creswell, 2014, p. 92)”. This notion by Creswell is advanced by Bryman & Bell (2015, p. 129) who state that research ethics bring in the meaning of personal values (Bryman & Bell, 2015, p. 129). According to Saunders et al. (2012, p. 226), research ethics refer to a standardized behavior for the researcher that guides him/her while conducting the study. Especially factors such as individual rights of participants or rights of those who are indirectly affected by the study need to be considered by the researchers (Saunders...
et al., 2012, p. 226). Easterby-Smith et al. (2012, p. 95) offer ten key principles of ethics, from which four are explicitly stressed by Bryman & Bell (2015, p. 134), namely ensuring the avoidance from any kind of harm to participants, ensuring consent of participants, protection of privacy of the research subjects, and avoiding any form of deception. We respect that ethical issues are of importance while conducting scientific research. Thus, for thorough consideration that enable us to trustfully answer the provided research questions on a high-quality standard, we created guidelines for our research behavior and pursued them during the interviews.

Saunders et al. (2012, p. 231-232) offer codes of ethics containing a variety of principles that must be taken into consideration and that occur for researchers in the context of their own research (Saunders et al., 2012, p. 230). Relevant principles that are based on Saunders et al. (2012, p. 231) and influence our thesis, are first and foremost integrity and objectivity. Saunders et al. (2012, p. 231) argue that researchers are well-advised to act openly and thus create a truthful relationship with their participants. This is also in line with avoiding deception while offering honesty and transparency (Easterby-Smith et al., 2012, p. 95; Bryman & Bell, 2015, p. 144). We guarantee the compliance of these principles as we informed our sample participants in detail about our study purpose, interview procedure, data collection methods and data analysis. Thereby, offering a high amount of transparency in regard of our thesis thus diminishes the probability of deception of our participants (Creswell, 2014, p. 93). Furthermore, we ensure every interviewee to receive the same treatment as it is mentioned by Creswell (2014, p. 93), and we share our study results with the participants if required, to add on to the levels of transparency and openness. We also sent out the interview guide in advance, to give every interview partner equal chances to prepare themselves or to be aware of the types of questions that would await him/her during the interview.

The next principle we adhere to is the factor of respect for all participants and firms and second, the assurance of privacy issues (Saunders et al., 2012, p. 231; Bryman & Bell, 2015, p. 143). Respect is connected to the guaranty to preserve the dignity of the participants and to avoid any form of harm to interviewees (Creswell, 2014, p. 94; Easterby-Smith et al., 2012, p. 95; Bryman & Bell, 2015, p. 135). Moreover, it is in our responsibility to store the received data safely and under compliance of confidentiality (Saunders et al., 2012, p. 232). Therefore, we informed our interview partners in advance, that the recorded interviews will only be saved on our personal computers and are only stored for the purpose of our thesis. The transcribed interviews will also only be shown to the grading committee upon request and will be erased from the version that will be publicly accessible. Another principle closely linked to privacy refers to the anonymity that all participants have the right to make use of when participating in a study (Saunders et al., 2012, p. 232; Easterby-Smith et al., 2012, p. 95). We ensured the issue of anonymity in that regard that we asked each interviewee beforehand if they want to take an anonymous role. Additionally, we informed the interviewee about our aim and our plan to make use of a voice recording device in the follow-up letter, and the possibility of the interview partner to refuse this procedure.

We made it clear from the start, that participating in our study is on a voluntary basis (Saunders et al., 2012, p. 231). Therefore, informed consent has been agreed on with all participants (Bryman & Bell, 2015, p. 139; Saunders et al., 2012, p. 231; Easterby-Smith et al., 2012, p. 95). We ensured this principle by letting every participant decide to what extent they wanted to answer to the according question without harassing
anyone to participate. Furthermore, to guarantee a good level of convenience for the interviewee, we conducted the interviews in German. This also enables us to talk in a more detailed way with our participant as the potential problems of missing language skills can be evaded. However, if the participant would have wished to conduct the interview in English we would have also guaranteed to fulfil his will accordingly. However, none of our interviewees requested the interview to be conducted in English. For our research, we interviewed company representatives that correspond to our earlier established definition of frugal innovation. Therefore, we were very grateful for them to invest their valuable time, without having direct advantages. Mostly, those company representatives were on the higher or highest hierarchy levels and in positions like Chief Executive Officer (CEO), Chief Marketing Officer, assistant of the CEO, company speaker and/or management. None of the participants received any form of compensation for their attendance in our study. Accordingly, we show respect and express our thankfulness in follow-up messages, as well as during and after the interview was conducted. Moreover, if required, we were happy to submit the study results to the participants so they could reflect on their input.
5. Empirical Findings
At the beginning of this chapter, we will provide an overview of the eight companies that agreed on participating in our study. As the concept is most likely not known in Germany, we tried to arrange interviews with a variety of industries to extend the substantive theory instead of investigating single cases. Afterwards we will delve deeper into the data we collected in the form of answers from our interviewees. The presentation of these results is based on the six final categories that we aligned to our interview guide. All categories correspond to the relevant literature streams and will be combined to serve as a starting point to extend the theory.

5.1. Participant Presentation
Below, we are introducing each company that was part of our study in form of interviewees. As some interviewees decided to stay anonymous, we will present the industry they are active in as well as their products and/or services and will have the abbreviations Cx. The presentation of each company follows a chronological order in the same course as we conducted the interviews.

Company 1: C1
Our first interview partner represents a major German player in terms of providing mobility services through line operation of busses. Due to a liberalization of the mobility sector in Germany, C1 was founded in 2011. Two products are the main anchor points for C1, namely the classic line operation of enabling customers to travel relatively cheap by bus, and the charter business, by which companies and organizations rent a bus for internal events. C1 is active in 20 countries across Europe. The interview was conducted with the executive assistant of management.

Company 2: Magine TV
Magine TV is a company based in Germany and Sweden, providing ‘linear TV’ as an OTT (over-the-top) operator. Interview participant, Mr. Steffen Schierloh, head of marketing, defined the affiliation of Magine TV to the Entertainment industry. The purpose of foundation in 2013 was the idea to break with the old economy of TV services and to create a flexible product. Generally, the product is free of charge (Freemium), but can be upgraded by the customer if required.

Company 3: C3
Our third participant was employed as key account manager at a Danish company that is also active in Germany and on other continents. C3 was firstly introduced in 2015, addressing mostly ecologic issues. The product of C3 is a platform on which restaurants advertise left-overs to avoid discarding food and thus, counteract the disproportionate food disposal. Customers in turn benefit from affordable products. The industry is referred to as Food & Gastronomy.

Company 4: C4
C4 is primarily active in Germany. As representative of the retailing industry, C4 offers a variety of products in different customer segments. As a main product that we became aware of in terms of suitability for our study, C4 offers a mini washing machine whose characteristics suit the concept of frugal innovation at the utmost. The interview was conducted with an area manager.
Company 5: C5
Our fifth interview was conducted with Prof. Dr. Kortum, a former employee at a large grocery chain, whose 18 years of work experience, from which the majority was in the procurement department, made him a competent interviewee for our study. Company C5, as a retailing company providing a variety of food and non-food products, is active in several countries across Europe. The most importance of the interview was laid on the conception of store brands as frugal products. It was required to avoid naming the company itself, while we were allowed to use the participant’s personal name.

Company 6: Stadtmobil Berlin
Stadtmobil is a Berlin-based car-sharing provider and therefore has only regional focus. As representative, Mr. Brauer, CEO of Stadtmobil Berlin, agreed on participating in our study. Stadtmobil Berlin, founded in 2007, is part of the Stadtmobil Group providing access to mobility for people who do not own a car and still want to be mobile.

Company 7: BlaBlaCar
Our seventh interview partner was Mr. Schiller, member of the executive board and business developer at BlaBlaCar. As representative of the shared economy, the main product of BlaBlaCar is a platform to provide available seats in cars to people who want to have access to mobility. BlaBlaCar is originally a French company founded in 2006 and then introduced to Germany.

Company 8: Cambio
Our last interviewee was Catharina Oppitz, head of press and communications at Cambio. Cambio is a car-sharing provider in Germany and provides mobility services in a station-based model which means that cars will be picked up and parked at the same spot, in comparison to so-called ‘free-floating’ models.

Concerning our interviewees and the firm they represent, one could question the fact that they inhere different positions in their firms and whether their position would still make them eligible for our research. We are aware of this and argue that all of our respondents are in ‘leading’ positions and were very knowledgeable about their firm. Even though interviewee from C3, who was ‘just’ an account manager, could provide profound knowledge since he is in the process to build up the company in a new market.

5.2. Data Analysis
The following sections will outline the process of theory extension that was the underlying guideline for our thesis. To make it illustrative and to align our own comprehensiveness in the complex field of grounded theory, we created the framework attached in appendix 9. As it can be seen in the figure, several different levels were necessary to break down the collected data to make it feasible for us to extend the existing theory on FI. Based on the conducted interviews, we collected a voluminous amount of data as explained in chapter 4.4. It will be illustrated how we identified valuable findings in this raw data. Comparing the collected data and searching for patterns, both of which are inherent concepts of grounded theory, lead to thorough scrutiny and conceptualization of the collected data (Charmaz, 2008, p. 402).

Level 1: Data Extraction, Data Reduction and Coding
Due to a rather short time frame throughout the process of the thesis, the interviews were conducted within 15 days in the beginning of March. Transcribing word-by-word
in German, and the translation were always done immediately after the interview was conducted. The method of discussing every interview in-depth after it was translated and screening it through for several times enabled us to identify and extract the passages that would most likely underpin our approach. For further comparison across the whole set of data, we created an Excel file that showed all relevant extracts. Due to our intention to represent every interview in the best possible way, we did not diminish the number of interview extracts in this stage, but connected the questions we raised during the interview with the according answer we received. The total number of extracts resulted in 323 interview extracts and can be found in form of an excel file in appendix 11. We believe that this way of presenting the results not only helps the reader to follow our line of argumentation and to understand each of the interviews, but also allowed us to have a more efficient ground for comparison of single extracts. The overview of extracts also follows the course in which we conducted the interviews.

During the process of scrutinizing the single extracts, we considered questions and responses to ourselves like ‘What is this and what does it mean for our thesis?’ This enabled us to code the extracts in a logical order, which is depicted in appendix 10 and consists of three parts: (1) number of interview/company in chronological order, (2) reference to the date the interview was conducted, and (3) the number of the extract. We believed this coding to be of great relevance to create a logical base for the generation of categories, which must not be confused with open coding and axial coding in later stages of this process.

**Level II: Category Generation and Open Coding**

During the analysis of scientific descriptions about the concept of GT, above all literature by Glaser & Strauss (1967), but also Strauss & Corbin (1990), the opposing book by Glaser (1992), as well as Charmaz (2006) and Charmaz (2008), we came to conclusion that coding is of utmost importance when applying the techniques of GT. We used open coding as a first coding step and is referred to as a “process of breaking down, examining, comparing, conceptualizing, and categorizing data (Strauss & Corbin, 1990, p. 61)”''. The inherent comparison of the extracts for similarities (Strauss & Corbin, 1990, p. 62) lead to higher leveled unspecified criteria. One important tool to enable comparison was the use of labels for each extract as it is suggested by Strauss & Corbin (1990, p. 63), to grasp the essential meaning. The connection of interview extracts, labels and specific codes lead to a rather big excel file from which we cannot present more than just a small excerpt like it can be found in the figure below.

![Figure 11. Extract of open coding, showing labels and codes](image)

After labeling and coding each extract, we pursued the open coding methodology through constant comparison, which means that we compared incident by incident (Charmaz, 2006, p. 53) and their properties to find preliminary categories (Glaser, 1992, p. 38). According to latter one, “open coding comes to an end when it yields a core category (Glaser, 1992, p. 39)”’. Accordingly, similar labels could be grouped into
categories that would preserve a certain set of extracts. The process of open coding or
generation of categories is defined by looking for patterns (Glaser, 1992, p. 40), while
over-conceptualizing is a serious threat. Therefore, we labeled all extracts with a
limitation of using a maximum of three words to keep it as simple as possible and tried
not to use too many different labels. The goal of the incremental combination of data
extraction and open coding was to include all relevant conceptual elements into one
analysis and to decrease the amount of extracts to be further analyzed. This process
ended up with a total of 126 preliminary categories which can be seen in level II in
appendix 9.

Level III: Category Reduction and Axial Coding
The 126 preliminary categories from the previous step needed to be further reduced and
combined to create a meaningful theory, i.e. a process of category reduction. As the
logical next step, axial coding is concerned with data that is put “back together in new
ways after coding by making connections between categories (Strauss & Corbin, 1990,
p. 96)”. Criticism upon this notion is in fact put forward by Glaser (1992, p. 61), who
accuses Strauss & Corbin (1990) to neglect the concept of theoretical sensitivity and
coding. Despite this criticism, both substantive codes, i.e. conceptual meanings through
categorizing, and theoretical codes, i.e. the theoretical connection between substantive
codes (Glaser, 1992, p. 27), were applied to successfully build causal conditions
(Strauss & Corbin, 1990, p. 96). As we study companies from a variety of industries,
both internal and external contextual factors are of utmost importance and must not be
omitted as they define “the specific set of properties that pertain to a phenomenon
(Strauss & Corbin, 1990, p. 101)” . Therefore, context stands for conditions in which
certain strategies are handled, managed, carried out and responding to the phenomenon

While undertaking axial coding, we moved between inductive and deductive reasoning
matching our research questions, as we proposed an interrelationship through coding
and data extraction, and attempted to verify the deduced connection (Strauss & Corbin,
1990, p. 111). This notion is also in line with our approach described in the method part,
namely the application of inductive reasoning while incorporating deductive elements
(see chapter 3.3.). Hence, we searched for similarities and differences across all 126
preliminary categories. We believed it to be necessary to interrelate these categories to
reach a higher level of abstraction, which in turn enabled us to extend the emergent
theory further through a manageable amount of properties. Principally, each category
consists of a set of general properties like characteristics or attributes (Strauss & Corbin,
1990, p. 61), while each property itself is represented by its dimensions alongside a
continuum (Strauss & Corbin, 1990, p. 69).

As consequences of this axial coding (Strauss & Corbin, 1990, p. 97; Glaser, 1992, p.
66) and as outcome of previous steps with admittedly temporal character, we identified
a total number of 41 categories for further processing (see appendix 9). As soon as the
preliminary categories from level II indicated similar dimensions we combined them for
abstraction to categories. We also built these categories in strong connection to our
interview guide which itself is aligned to our research framework. However, the number
of categories is higher than the total amount of questions, because we received more
thorough responses from our interviewee and thus, were forced to add further criteria
and categories.
One further notion must be added in the sense that some preliminary formulated categories were also taken further as categories with the same connotation. One example can be seen in the following figure, addressing the analysis of important criteria of frugal innovation if applied to the product and service of our interviewee.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Preliminary Category</th>
<th>Label/Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Functionality</td>
<td>Core Functionality</td>
<td>C2/023/11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C3/033/11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C4/063/11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C5/093/11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C6/103/11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C7/143/11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C8/153/11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C1/013/11</td>
</tr>
</tbody>
</table>

Figure 12. Extract of category coding

**Level IV: Selective Coding**

The third step we applied is selective coding, referencing to Glaser (1992), “to selectively code means to cease open coding and to delimit coding to only those variables that relate to the core variable (Glaser, 1992, p. 75)”. As it is further described by Glaser (1992, p. 75), ongoing, constant comparison and analysis of the data are necessary procedures to approach a ‘core variable’ to generate new theory. Accordingly, the core variable or category is a central concept which combines other previously defined categories and properties (Strauss & Corbin, 1990, p. 116). Furthermore, Glaser (1992, p. 76-77) argues for the relative simplicity through which integration and core categories arise, as the generation of core categories is considered automatic. In a way, this is what we realized in our study as well. As we study a variety of variables that, if combined, define the state of FI in Germany, the singular concepts are the core variables of our approach. Throughout this process, we also made use of the interview guide and thus, of the research framework to identify our six final categories: (1) general information, (2) frugal innovation, (3) product characteristics, (4) Bottom of the Pyramid, (5) requirements, and (6) value (see appendix 9).

The different steps and each conceptualization to a higher level of abstraction can also be seen in appendix 12. Level V, i.e. the extension of the substantive theory and the revision of the framework will be the core of chapter 6.

### 5.3. Study Results

The following section will provide the presentation of the empirical results that we collected from the interviews. We examine the results in the same order as in the previous section, i.e. answering the questions aligned to the six deduced final categories. Each category is equally constructed, drawing upon the inherent properties. We will incorporate quotes from our study participants to demonstrate first-hand insights. Due to reasons of readability and comparability, we refuse to use initials for the names of each participant, as it cannot be provided when anonymity was requested. Therefore, we use the number of the company in the chronological order of conducted interviews, analogically like in appendix 11. Furthermore, we present only a limited amount of

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1 The figure illustrates that the chosen preliminary category of ‘core functionality’ was also chosen to be one of our 41 categories due to its relatively limited dimensions.
quotes as we received repeating answers that indicates data saturation and in turn leads to a higher level of abstraction.

5.3.1. General Information
The first questions from the interview guide incorporated in section II were used to allow the interviewee to get comfortable with the interview situation, meaning that question five and six are not influencing the study purpose. Thus, we skip these two questions in a more detailed description, but they can still be found in chapter 5.1. and in appendix 8.

Influencing and Motivational Factors
This section will define the set of influencing factors (question 7 from our interview guide) that were prevalent in the product development. While we expected more overlapping answers, responses proved to be different and appeared in a variety of influencing factors. Two of the eight participating companies (C1 and C2) saw market changes as the dominating influencing factor.

C1: “In principle, the basis for the whole thing was that the founders have seen that the market is liberalizing. (...). I believe 2013, where remote bus lines were allowed for the first time, and that was a great potential. Our founders have seen and thought: ‘Now or never, we have to try it!’”

C2: “The motivation was I think to offer a product that is flexible and adapts to the customer needs, not the other way around. I think it was more like a time effect because we have just broken with the rules of the industry and have built a different kind of product than usual. Now, we just have the opportunity to offer a service for little money.”

While C1 refers to the change of the jurisprudence and C2 also incorporates flexibility as a core driver, C3 and C4 directly aimed for societal problem solving. This can be seen in their answers given to the specific question.

C3: “I would say that it motivates incredibly, if one knows, that for a social problem a solution is actively developed and the foundation was ultimately also personally motivated.”

C4: “So, from the motivation, I believe that it suits our mission to offer products, which do not quite meet the high expectations of some customers, (...) there are also clients and people in Germany and in many other European countries who need to manage with a limited financial budget, and for whom the products we offer are quite relevant. So, the motivation is quite a social (...).”

Apparently, only one company (C5) stated that profit orientation is the main influencing factor during product development. Furthermore, C8 was founded due to an environmental movement which also serves as the key influencing factor for this company. C6 (‘socio-demographics’) and C7 (‘masses’) refer to the customers and therefore the target group to be most relevant. The customer perspective can also be found in the answers of C1 and C2, making it the most called influencing factor.

Core Customers
As we assumed FI to be mainly addressing lower-income classes, the answers regarding the target group were very interesting. Exactly half of our interviewees, answered this question (question eight in our interview guide) with addressing ‘masses’ as their customer group. The companies addressing the masses are C1, C3, C6 and C8.

C1: “In principle, however, it is the case that we are targeting the large masses as target group and, of course, offer a favorable transport as a major value proposition for the company.”
C3: “Exactly, absolutely the ecological factor, is not aligned to a specific target group, and this also shows in practice. This is a problem across all target groups and thus is why all target groups make use of the service.”

The next most often named answer regarding their target group was the segment of ‘low income’ customers. Three companies, namely C2, C4 and C7, specifically address these customer segments with their products and/or services.

C4: “So basically, we are interested in making products available to people of lower income classes or people with low income (...). “

C7: “In this respect, I would say that such a service is certainly attractive and appealing for people of low to medium income.”

Only one company, C5, refers to price-conscious customers. We will see in later responses that price-consciousness is not only a phenomenon in low-income customer groups but across other segments as well. Yet, the interviewed representative of C5 addressed this topic with the following:

C5: “Generally, though, it will be target audiences, who are defined by budget restrictions and therefore consider frugal innovations. (...) Because it is these target groups, price-conscious customers, who shop for price motives, have always been existing.”

Market Focus
The answers regarding the geographic affiliations (market presence, seen in question nine from the interview guide), would be of great importance for the further analysis of the answers as it will show the meaning of income situations of the customers in each location. Five of the interviewees (C1, C2, C3, C5 and C8) therefore named ‘Europe’ as the focal market for their engagement. Yet, it is notably that C2 and C8 are active in only two countries in Europe, either Germany and Sweden (C2) or Germany and Belgium (C8). C1 and C5 on the contrary are active in more than 20 European countries, where indeed a fairly large income difference appears.

C3: “So in European countries, France, Sweden, Norway, UK, Austria, Switzerland, and now also in the future in the USA a bit and a bit in Australia. These are the locations. But ultimately, the concept and the motivation as well as the user groups are the same in all European countries.”

Further mentioned market activities range from regional to global but are only mentioned once. While C6 is only active in the German capital Berlin, C4 is active across Germany. It must be mentioned, that the focus of C4 is primarily in Germany, however products can be bought from outside Germany and will be shipped accordingly.

C4: “We are only active in Germany, but of course you can also buy our products from abroad. I believe it is less a question of income than the distribution of income. Because there are people everywhere, and in every country, and even in every European country, there are people who perhaps earn less, and so seek products which are simply affordable but offer good benefits. And I believe it works everywhere.”

Lastly, C7 stated to have a global scope. Differences in terms of income standards therefore occur as activities are held in European countries like Germany and France, but also in less developed countries such as Turkey, Brazil and India. The income situations within each addressed market can barely be answered more generally and broad.
C7: “The site is accessible via the English version worldwide and you can also theoretically get a ride and offer rides in other markets. (...) But theoretically, you can also offer a ride from Rajasthan to New Delhi India, and that would not be a problem.”

5.3.2. Frugal Innovations
This section is now concerned with the core of our research, namely frugal innovation. To get a first impression about how knowledgeable our participants were in the field of frugal innovation, we raised the question of familiarity in this context. As this was just a precursor to the definition of frugal innovation, we decided to not go deeper into this question. Yet, we still confess that not a single participant was knowledgeable about the concept, resulting in an important meaning for our study, as they prepared themselves in advance for the interview. We do not explicitly refer to other known examples, as it does not contribute to the current discussion. However, it is notably that four participants could name further examples (more than two were known), while two mentioned one further example and two were not able to mention any examples at all. As it still shows that our interviewees could abstract other companies than their own, we do not believe that deep execution and citation of this category and according answers would greatly benefit the thesis.

Definition of Frugal Innovation
This question (question 10) and the answers to this question would be of absolute formative character for our thesis to investigate the understanding of the concept, as it enables us to add certain notions to the existing knowledge about FI. Interestingly and generally spoken, even though all participants did not know the term before but confessed they have prepared for the interview, we received good insights and interesting ways to define the concept. After the initial open coding, described in chapter 5.2., we had a total of ten codes that, according to our eight interviews, are supportive in defining frugal innovation. The most mentioned notion was ‘core functionality’, which in fact was named four times (C3, C4, C5 and C8). For these interviewees, the reference to functions of the product and the core idea of the product is put forward. According quotes can be found below:

C4: “it is about developing and offering products with which one may omit certain functions so that one concentrates on the core functions. So, that one has products that are good. So, what I found online and what made me think so a bit was the principle "more for less". So, one offers a certain value economically or socially, with less resources, for example of financial nature, and creates value for a large group of people.”

The next most often mentioned criterion is ‘affordability’, which can already be found in the answer by the representative of C3 next to the issue of ‘efficiency’. C5 also mentions the core function but adds the price motive, that is inherent in frugal innovation, referring to the issue of affordability.

C4: “From my point of view, frugal innovations diminish the scope of and focus on the core product and the price motive.”

C6: “These are innovations aimed at the population that have less money, less economic performance.”

The low-income population that is mentioned by C6 (see above), is accompanied by our interviewee from C1 who also adds the notion of value creation.

C1: “Therefore, my knowledge is now based on what you have written to me and brief Google research. But, what I have understood however is that frugal innovations on the one hand is focused on target
groups containing people with lower income and at the same time is about the effort to create value for this target group with only little effort or reduced offering.”

Another interesting definition was offered by C2. The interviewee presented the criteria of ‘invisibility’ and ‘ordinariness’.

C2: “I would say it’s like an invisible innovation, because it does not seem disruptive, but somehow over time it becomes available through the price or through the accessibility. At some point, it becomes a normal product.”

**Motivation to Address Low Income Customers**

We took-up this question (Follow-Up (10) according to the interview guide), despite of what kind of answers we would receive in the previous question. As some participants already referred to low income customers, we believed it could be beneficial to see the motivational factors of a company when low-income customers are considered as the target group. In fact, this is what we assumed for our findings and our thesis. While it was no surprise that these information surfaced, we were astonished by the number of times enabling ‘participation in life’ is a core motivational factor for firms. In total, six out of eight interviewees (C2, C3, C4, C6, C7 and C8) mentioned this criterion.

C8: “So, the general motivation is, that one just wants to allow participation to as many people as possible. Well, it is always specific when it comes to human pleasure. According to capitalist considerations, it is more likely that you reach as many people as possible and that it can open up really big markets, if you just say, ok you have the threshold now just as low as it can be, that you can also reach as many people as possible.”

C8 also mentions (see previous answer) ‘low thresholds’. The connection between participation and thresholds is, in fact a formative insight and is accompanied by another interesting answer by C6 who refers to market saturation in higher income classes.

C6: “I can imagine that there is a certain saturation in the market for all other income classes, so the higher income classes. There is the discussion that car sharing is far less widespread in low income classes than in the higher ones. It has been assumed that this has to do with education. The status symbols are even more important in low income classes. A motivation could be that one goes where no one else is, lower income classes.”

Another motivational factor is mentioned in reference to the issue of ‘affordable products/services’. Three companies (C2, C3 and C5) mention this influencing factor as being relevant. The according quote from C2 has been cited already.

C3: “Yes true, definitely. Just so, for example, smartphones, but also people with a lower income can easily afford.”

C5: “So if we define this as slimmer, more cost-effective, simple solutions, then we refer specifically to the price motive at the consumer. (...) I believe that the price motive is clearly targeted here.”

One last motivational factor is described by our first interview partner, who refers to the economic-driven opportunity of products to be of importance for firms.

C1: “So, I do not know if I now speak for us as C1, but basically I would say, of course, that from a worldwide perspective, there is a poor but extremely large target group. And, if of course, a product can successfully be placed in the segment, it becomes economically important for a company.”
Assessment of Importance of Frugal Innovation

As this question (11) is a shift of focus of frugal innovation from a global perspective to the German perspective, we were curious about the answers in this scope. Two contestants (C1 and C8) would not see any form of potential for FI in Germany. Despite our classification to have ‘no potential’, we confess, however, that the answer of C8 could also refer to context-dependent potential, as she seems to be unsure. Yet and in reference to the way it was stated, we believe it would better suit here.

C8: “Perhaps this is actually also in the German market this income spread, maybe it is not as strong as it is in the African countries, for example. The difference here is maybe not as big. That’s why I’m not sure if this concept really applies in the German market.”

In total, four of our interviewees (C2, C5, C6, C7) see a context-dependent potential. As C7 referred to this question very much in connection to the activities of his own company, we see a context-dependent potential, which, at least, is approved by him.

C2: “I think the applicability is there but I think we are a country that does not recognize frugal innovation instantly, because in developing countries it is more about the innovation itself and its concentration on the digital transformation that in turn lead to a frugal innovation.”

C7: “The applicability is ultimately unrestricted, based on the pure analysis of the activity. (...) These are simply inefficiencies. (...) One could also speak of a “problem of use”, because one excludes others from the benefits of their own property, which is, one of the central characteristics of private property of our society, or was at least in the past. However, the scope of the application is basically unlimited for any car journey exceeding a certain kilometer range or for long distance rides.”

In addition, two participants attest FI to have potential and see clear extension of the concept to the German market.

C3: “Yes, definitely. Because ultimately, there are areas in Germany that may not have access to technologies, either, and there are also layers where the income is rather low. So basically, in any case.”

C4: “But I believe that this type of innovation can be of fundamental importance in Germany, since we as an innovation society, as we are interested in the fact that products are getting better and faster and bigger but often without any use at all. The fact that products refer to core functions and thereby make the customer's life easier will be of very great importance.”

5.3.3. Product Characteristics

The product characteristics (question 12) and the critical reflection upon the application of each criteria on the interviewee’s own product is crucial for us to determine the characteristics of FI in the developed world. The criteria that we deduced from examples of emerging countries were thus verified. In terms of the seven core characteristics, we could only receive two possible kinds of answers, namely either the application of the criterion in the own product or that it is not an element of the product.

Core Functionality

The first analyzed criterion is ‘core functionality’. This term refers to a need-orientation and the elimination of nonessential functions to reduce the product to the core idea (Weyrauch & Herstatt, 2016, p. 5; Kuo, 2016, p. 3) (see figure 6, chapter 2.1.6.). The majority of our participants therefore agreed on the application of this characteristic in their product and/or service.

C4: “So, I believe that with core functionality you aim at the functional scope of a product, and if so, then our washing machine, which you explicitly mention in your cover letter, is a perfect example. Other than
washing machines from well-known manufacturers, the washing machines we offer, offer significantly less features, and focus more on the essentials. So, I would say that functionality is a very important criterion with us.”

C6: “The core functionality is one of the main criteria, when we buy vehicles, we want the essential things in it.”

Only C1 did not see core functionality incorporated in their own service as additional services are also offered.

C1: “We have innovated, like pioneered Wifi for all travelers, what Deutsche Bahn did not have, and now also offers. Why? Because we did it. And we have somehow got very strong focus on using digital media.”

Performance Level
Performance level refers to a good technological base of the product and stands for sophistication in terms of adapted technology (Angot & Plé, 2015, p. 4; Rao, 2013, p. 66; Weyrauch & Herstatt, 2016, p. 9). Four of our eight participants approved this criterion to be part of their own product, while companies C2, C3, C5 and C7 do not see this characteristic incorporated. As representatives of these four companies refuse to mention this criterion, we can only cite the ones that approved it in turn.

C1: “I believe it is more likely to be performance level. So, what X01 has done, compared to what was there before, was that all these bus companies, who have not understood anything from the Internet. So, we have just somehow put very strong focus on digitization.”

C4: “Performance level, as I understand this is also about good technology, which offers a high degree of utilization, and of course applies to our products too.”

Usage-Centered
Usage-centered products refer to simple ways of using the product to enable the customer to easily handle the product (Weyrauch & Herstatt, 2016, p. 5; Angot & Plé, 2015, p. 6; Rao, 2013, p. 67). Again, the majority, seven out of eight participants approved this criterion.

C2: “Usage-centered is one of the main points in our service.”

C6: “Usage orientation is our whole business model, you do not have to go to a car rental every time so you have an access with a card for the car even though this is already old procedure. Nowadays people want to open the car with an app. It must always be more comfortable.”

However, the representative of C5 rejected this criterion as he did not mention it specifically in his explanations but confesses that the customer is often not included in the development of the product not only in his case but as a general phenomenon in the market.

C5: “So I would estimate that unfortunately, as in all things, one asks the customers much too little, target groups are hardly asked. This is simply pushed into the market and whether it works or not is observed solely by sales results. I also find it very difficult to ask customers, so I think it will be very difficult to approach them.”

Ruggedization
Robust design of FI is a mandatory requirement for products to cope with the harsh environments in developing countries. Therefore, Basu et al. (2013, p. 65) and Kuo (2016, p. 8) refer to ruggedization as another important feature of frugal products. During data collection, we had to explain this criterion in nearly every case as this term
does not exist in German. In total, six participants approved ruggedization to be also part in their product. Only C1 and C2 did not incorporate this characteristic. On the contrary, the following quotations state the application of this criterion at company C3-C8.

C3: “Yes, I would say, this is certainly a core criterion of our app, which is not necessarily designed but rather it is practically a sub point because it works.”

C5: “Ruggedization refers to core functions, so if you now have a mobile phone, so it must work, even if it falls. Maybe.”

In fact, we observe that our participants had difficulties to handle this term from its original context, however, they linked ruggedization to reliability. This will be a rather important finding in the analysis of the answers in later stages of our research.

Affordability
According to a variety of authors and publications (e.g. Basu et al., 2013, p. 66; Weyrauch & Herstatt, 2016, p. 6) affordability represents an important component in FI. This could be confirmed through our research. All participants therefore approved this feature. However, as most of the interviewees just checked the issue of affordability, attention-rising citations cannot be stated here, as it seemed to be rather clear for the interviewee.

C1: “And regarding affordability, this is also a very important lever for us, as we have left out things, that in our business model we simply have no buses.”

C7: “Affordability in any case. This is based on the nature of the product, carpooling has been defined with the departure into all markets, and to cut down possibilities to earn everywhere where costs appear. So, you cannot earn more than costs arise.”

No-Frills-Strategy
Rao (2013, p. 66) refers to the criterion of no-frills to being ‘lean’ which contributes to the aim of realizing a lower price. This notion is also accompanied by a variety of authors such as Khan (2016, p. 6) and Hall (2014, p. 267). In terms of our subjects under scrutiny, the approval and denial of this criterion was equally distributed, i.e. four denied and four interviewees confirmed the no-frills strategy approach. Latter one was seen in the answers by C2, C5, C6 and C8.

C2: “No-Frills Strategy, well we have just no other costs and are very lean.”

C8: “Exactly, we have everything you need in our cars. We don’t have drink holders in the car because like I said, they do not live long.”

On the contrary, C7 mentions that this feature was previously ensured. However, diversification strategies somewhat changed the status quo.

C7: “If you say no-frills is the focus on the essentials, so renouncing gadgets, yes. I would say this was the start of the service, because it is self-sufficient and offers a product-market-fix in all high-priced countries. Now it slightly changed and due to certain diversification strategies (...). Therefore, BlaBlaCar is no longer quite in the beginning, it has just developed further.”

The representative of C3 confirms the criterion generally but confessed that the no-frills approach was not deliberately pursued.
C3: “And the first that we have omitted certain factors somehow, because the app is relatively simple knitted. But we did not actively decide on which functions in particular we want to omit.”

Lastly, C4 would also generally approve the no-frills aspect for their case, yet, he refers to functions which was already confirmed under ‘usage-centered’ and can be seen above. After a thorough discussion, we categorized it as denial of the criterion.

C4: “I would say it is limited in our case, since I believe that is more so in the direction decoration and that one omits certain style factors and focus on the core. I mean, we're doing it in a certain way, but it's still more about the functions, and that was more the issue of usage-centered orientation.”

Environmental Issues

Despite the predominant notion by Weyrauch & Herstatt (2016, p. 10), that FI do not directly enhance the sustainability ranking of a product in terms of environmental issues, still both confess that these might be advanced indirectly. We therefore raised the question to analyze if the environmental protection is targeted with the product. Six of the contestants approved this criterion, two denied it (C2 and C5), from which latter one was more than critical regarding this feature what we will see later (see question 23). The first one to deny it was C2.

C2: “I would say there is no real environmental conditions. (…) Environmental issues do not really concern us because we are an online service.”

C5: “If one works out differences, from my point of view, most of the articles are not environmentally friendly, with almost all articles this hardly plays a role. It is often stated, but this is not the case.”

As mentioned, six companies (C1, C3, C4, C6, C7 and C8) confirm this criterion. Even more, some also regard this as one of the focal points when the product was developed, which we will see in later questions as well.

C1: “So, in principle, it is so that our founders have a green background. One was also politically active, which means that the ecologically sustainable aspect plays a role somehow. Our buses are not only green in appearance, but also ecologically, of course, a good alternative to the car, for example.”

C8: “All our cars are low in emission and are thrifty. (…) This is of course important to us and we also define ourselves as part of the Green Economy and simply say we definitely want our cars to emit little emissions.”

In case of C6, as a clarification question because no answer was given actively, we asked for environmental issues and if they concern the activities of the firm, e.g. in form of acquiring only cars with low pollutant index. The answer was accordingly as seen below.

C6: “Yes, we must, definitely. We pay attention to the CO2 value. This is important for the whole industry.”

The summary and the application of each criterion is illustrated in the following table. What becomes clear after looking at this table, that some traits are named more often than others. This mostly refers to core functionality, usage-centered and affordability, with latter one being considered most important. A more thorough analysis of these findings will be done in later stages of our thesis. As stated before, we apply the analyzation techniques of grounded theory. Accordingly, in this state of our analysis, we transferred the original collected qualitative data into quantitative data to illustrate the applied product characteristics in a more suitable and understandable manner. The edited data can be seen in the following table.
Table 3. Overview about the applied product characteristics

<table>
<thead>
<tr>
<th>Core Functionality</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>C5</th>
<th>C6</th>
<th>C7</th>
<th>C8</th>
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</thead>
<tbody>
<tr>
<td>Performance Level</td>
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<tr>
<td>Usage-Centered</td>
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<tr>
<td>Ruggedization</td>
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<tr>
<td>Affordability</td>
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<td>No-Frills-Strategy</td>
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<tr>
<td>Environmental Issues</td>
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After the original seven criteria, deduced from frugal products from emerging markets, have been discussed and accompanied by the according answers by the interviewees, we were still curious whether further criteria are necessary and justified for the German market context. The very first interviews brought up two additional characteristics, namely digitization and ability to upgrade, from which we believed to be important. From this moment on we suggested them throughout the next interviews to probe them deductively. Afterwards we let our interviewees suggest further criteria for adaptation. These findings will be demonstrated in the following.

**Digitization/Connectivity**

Surprisingly for us, five of the participants approved this criterion due to the requirements in the German context. During the interviews the term digitization was sometimes used interchangeably, like in the case of C1 (“So that's kind of the same for me. Digitization, connectivity.”) while C6 and C8 confirmed both separately. For further processing, we follow the assumption of the representative of C1 and combine the terms connectivity and digitization into the category ‘digitization’. Accordingly, five (C1, C2, C3, C6 and C8) companies confirmed digitization to be an important feature in their product and/or service.

C6: “We are principally dependent on the digital system computers and on the booking system. Connectivity is quite demanded with larger cars (...).”

C8: “As said before, we have been there for over 25 years and before the Internet, the service was booked by telephone and bookings have been registered in paper lists etc. Of course, this technical development and also the Internet has naturally brought us forward because alone the fact that people nowadays have smartphones they can book with.”

**Ability to Upgrade**

One of the most popular practical examples for the ability to upgrade a purchased service is the airline operator Ryanair. Hence, we considered that the ability to upgrade a certain product or service, enables the customer to customize the service. However, the basic version of the product is still frugal and can thus be consumed without additional extras. Yet, in the German market context, the scope of services varies greatly as well as the amount of services offered. Therefore, we believed this question to be interesting to define further criteria. In total, half of the participants answered with ‘yes’ to this question (C1, C2, C6 and C8) and hence attested this criterion. In case of C1, the scope to upgrade a service is rather limited but the representative confirmed that they are currently working on improvements.

C2: “Exactly, I think that is useful. With us, we have a Freemium product. (...) If you want more, like HD, you can add it for a small price. So, I find an upgrade strategy useful, because we offer a product for the mass and if someone would like to have even more, he can then of course upgrade. I would answer the question with yes.”
C8: “Well in the end, by a differentiated vehicle fleet, if you just say ok, I would simply drive the nicer car, then I book the nicer car and in turn pay more. So, I can basically do this in the car sharing only over the different car classes.”

For the other companies that participated in the study (C3, C4, C5 and C7), this question was not applicable as only the basic version is offered. Therefore, we cannot cite according answers at this point.

Adaption of Criteria
Following the interview guide, we then examined question 13, i.e. whether further specs are incorporated in the product for them to be successful in the German context. We received a variety of answers, even though three companies (C1, C4 and C8) did not contribute any further criteria. C7, offered the criterion of price recommendation that supports the drivers of the cars, as well as market conditions in form of jurisprudence and applicable law.

C7: “Market conditions. So, of course, we must orient ourselves to the legal framework, according to the Public Transport Act, and accordingly the price recommendation that BlaBlaCar offers to the drivers, because we do not set the price, but the drivers set the price.”

Another criterion that was suggested to be added is ‘branding’, put forward by the participant from C5 and by C6.

C5: “Even in countries where you think people earn almost nothing. These are rather market symbols, especially Western consumption, is very important. (...) Branding, yes exactly. I might add.”

C6: “So yes, there is a market criterion, because we are in the automobile sector. German brands run better than foreign ones. (...) It’s more like vehicle branding with stickers. We also do that but we do not advertise that you can drive a golf with us.”

The last product criterion to be added is the issue of ‘flexibility’, as suggested by C2 and the representative of C3, who refers to a flexible structure not only in terms of the product, but also for the company. C2 also mentioned the customers desire to have a flexible product and can be cited as seen in the following.

C2: “Yes, we, as society, moved away from the idea of ‘we accept what a company set us up to’, but I believe the power goes towards customer and when the company does not fit the customer’s desires, then I think the company has no future. So, this is what I think personally.”

C3: “Yes, but basically I would say for every start-up, maybe even for any company. The fact that you look at how the product performs in the market and how one can customize it. You need to be flexible to adapt quickly, if one notices the customer would wishes it to be different.”

Competitive Comparison
Question 14 (see interview guide) was raised to gain deeper insights about the competitive structures in the German market. During the literature review and the thorough investigation of the concept, we assumed that the concept of frugal innovation is barely known in Germany due to the lack of literature. Thus, we ran into difficulties to identify frugal companies and make them agree on an interview with us. Anyway, the question for competitive offerings would also be indicating, about how applied FI are in total, five confessed that other offerings have the same characteristics. One must critically state, that sometimes, like in case of C1 and C2, the perspective is twofold in terms of indirect and direct competitors.
C2: “Yes, our direct competitors (…) have identical product criteria. They also have the same motivation as us. Our indirect competitors such as satellite providers or cable network operators, who certainly have other product characteristics (…). But to return to the question, the direct competitors have the same product criteria in my opinion.”

As it can be seen in the answer by our interviewee representing C4, a key feature to distinguish between competitors is the price.

C4: “And, of course, we also have competitors on the market. And mostly, if the same products are in focus, these also have the same functions. (…) The only difference between these is probably the price. But I also guess the difference is just slight.”

Three participants (C6-C8) on the contrary stated, that the criteria are different from those of competitive products.

C6: “No, they have not the same. Freefloaters like CartoGo, DriveNow and Multicity, there are very high-quality cars, so the criterion of core functionality completely disappears. Same for the no-frills strategy, it’s the opposite what they do. This is also a very high-priced car sharing. This is definitely not a frugal innovation.”

Reflection of Frugality

At this point, a critical reflection, about whether their own product or service is considered frugal, is crucial. We addressed this question (15) after we made the participants familiar with the criteria laid down in the literature. This question is particularly interesting because the interviewee did not have any knowledge about the concept of frugal innovation previously. Even though, we have identified the companies deliberately based on our definition of ‘thrifty’, ‘modest’ and ‘affordable’ (see chapter 2.1.4.), we were still open minded and would have accepted denying answers. In fact, just one participant, i.e. the representative of C5, whom we included due to his favorable knowledge about store brands, explicitly answered negatively.

C5: “Actually, it is not. The company owns a 100% benchmark from the brand, and the only thing that should be missing is the marking. If you leave out the marking, it may count as frugal. But, there are a few traders who make that, but that is actually also their death, therefore they do not come on the right track. (…) Because of this, I would not see store brands as a frugal innovation.”

Three of our participants (C1, C3 and C6) stated a limited ‘yes’. This notion is interesting for us, as it proves the general application of frugal criteria, but they still do not identify themselves with the concept.

C1: “If frugal even means that I try to focus on low-income group, then I would state a limited ‘Yes’ because we have not designed this with the question ‘how can we create a product for a low-income target group’ only, but we have been told how to build an attractive business model where the customer somehow has a cheaper and more comfortable way to get from A to B.”

In case of Stadtmobil Berlin, the case is more specific. C6 firstly stated that he denies the term of frugal innovation for his company with the following quote.

C6: “No, because a core criterion for me is simplicity and is oriented to people with a lower income. This is not our main focus, we include these aspects but it is not our strategy.”

However, as it can also be seen in table 3, all seven deduced criteria applied in case of C6. We therefore tackled the topic again at the end of the interview which lead to the notion that our study participant would now agree on the concept partly. This insight forced us to categorize Stadtmobil Berlin as limitedly frugal.
C6: “The product Car Sharing itself not, since you have to be clear which part of the fleet you mean. The lower ones of course can be frugal. Then it must be the car for €1 an hour. These only have air conditioning and that’s it. You may interpret this as frugal.”

Furthermore, half of our subjects under study agreed on applying the term frugal innovation.

C4: “Yes, definitely! I believe we can now apply this term to ourselves, even if it was not previously known.”

C7: “So, yes. So, if I go back to the criteria, and I can positively check any criterion for BlaBlaCar, perhaps except for the no-frills strategy, then yes, I would say, we’re frugal.”

As this section is only assigned to present the empirical findings, the notion that most companies confessed to be at least limitedly frugal, if not completely frugal, will be of great importance when analyzing the data even deeper. This will be addressed in the next chapter of our thesis.

5.3.4. Bottom of the Pyramid

This section is about the specific customer segment in which frugal innovations are usually applied and in our case adapted to the German market. We wanted to know more about the general knowledge of our participants in terms of definition, presence in Germany as well as information regarding the involvement of this customer segment. These answers would be formative and enable us to identify the presumed application of FI in Germany that address the lowest level of income. Surprisingly, this section turned out to be highly informative and participants were very forthcoming in their answers to address the problem even though it seems that the term is not used in the German context, according to our literature review. The results and different statements of our interviewees will be presented accordingly not only following the structure of our coding but also in order of the interview guide.

State of Knowledge and Definition

This question (16) regards the state of knowledge in terms of BoP of our participants to fulfill the formative character of our thesis. However, at first, we considered this question according to the global definition by Prahalad (2005) to get a preliminary overview about the familiarity with the concept in general. We divided this question into two parts, one including two preliminary categories: known or unknown that represents the state of knowledge of the respondents. Part two led to four categories based on the answers of our interviewees, namely low income, poor population, least possibilities and base/foundation in how they define the BoP. Interesting in this regard was, that seven out of eight informants (C1-C7) have heard the term before but define it based on four characteristics that in nature are similar to each other, whereas one firm (C8) did not know anything about it.

C5: “So, BoP, these are the 3bn people in the world who live by $ 1.”

C6: “Bottom of the Pyramid is the biggest layer on the bottom, isn’t it? And on the top, are probably the rich people?”

Thus, five of the respondents (C1, C2, C5, C6, C7) assigned the term ‘low income’ to the definition of BoP.
C1: “So, it is about the income classes, and in fact the majority of the pyramid has a low income compared to the few rich who have a lot. Hence the term is familiar to me.”

C2: “(...), but I suppose it goes towards the distribution of income and that you have any people in the low-income sector, (...).”

It was also proposed, that living in the bottom of the pyramid is correlated to the characteristic of having the ‘least possibilities’ (C3, C4, C7) or as being the ‘poor population’ (C3, C4).

C3: “So, I say, easily stated it can be translated as the poorest of the poor. So the population layer with the very lowest income, or even somehow the least possibilities.”

C4: “I would say that this is about certain social groups, which perhaps have fewer possibilities, now spoken in total, which perhaps also comes from the financial situation of these people.”

Only one, namely C8, has never heard the term but after thinking about it, labeled the BoP as a ‘foundation/base’ for something.

C8: “No, I never heard it. (...). That would probably define the basis, the opportunity to offer something that is covering lots of ground or as many people as possible.”

Abstraction of BoP in Germany
This part is about linking the definition of BoP to the context Germany. Interviewees were asked on how they would define the BoP in Germany (question 17) and while most contestants (C1, C2, C4, C5) stated ‘low income’ as one of the criteria, other informants allocated several criteria to the BoP in Germany for people to be assigned to the lowest level of the pyramid.

C1: “So, BoP in Germany are certainly people who live with Hartz IV (unemployment compensation), but also many of employees that are rather low-income earners, such as hairdressers, some employees in the health-care sector, or cleaning staff or just people with a low income. That would be in my context of BoP.”

C4: “I think the income is already a very good point. I do not know the income distribution for Germany by heart. But I guess it is the people with the least income, or no income, like unemployed people. I cannot tell you how high this number is.”

Through observation, the representatives of C1, C2 and C4 stated ‘unemployment’ to be of importance when labeling the BoP in Germany, next to ‘low income’.

C2: “In Germany, we have the minimum wage but probably the ones who earn the minimum wage and perhaps are the people who get additional funds, including Hartz IV and unemployed people. That would be the BoP for me.”

Looking at C5 and C6, one can convey, that both orient themselves at the average income, only considering people who live below the fixed poverty line as part of the bottom of the pyramid in Germany.

C5: “(...). If we only take Germany, there is a poverty report. I think you count as "poor" in Germany, if you have 30% less than the average. (...). You always take income, fortune, which, I would say, are the most common ones. But of course, you can turn this further. Income and wealth are also connected with other things. Education and so on. This is what I understand as BoP.”

C6: “I don’t know how it is defined, probably people who earn less than 60 percent of the average income or so, which are officially considered poor. I’d shoot in the blue and say 15 percent in Germany?”
Another label that our respondents (C3, C5 as seen above) put on the BoP in Germany is ‘poor population’ but also ‘least possibilities’ (C3) and the low ‘educational’ factor (C5).

**Familiarity of BoP Customers**

This section (question 18 according to the interview guide) aims to understand if our contestans recognize the BoP in Germany as a customer segment according to the earlier stated definition and if they have a synonymous term for us to eliminate overlapping of definitions and terms used. Surprisingly, after defining the bottom of the pyramid in Germany, all of the interviewees admitted knowing this customer segment and thus, acknowledged the existence of a BoP in Germany.

*C3: “Yes, definitely. This is, of course, also a target group where we often ask ourselves how we can involve them more.”*

Regarding the question whether they use a different term for the from us defined customer segment BoP, all the participants of our study answered that with ‘no’ and provided no further terms or definitions of the introduced BoP.

*C8: "We know the group but do not actively target them. We do not have a name for this group."*

**Addressed BoP Sector**

Next, we wanted to know if the firms we interviewed are specifically addressing the stated customer segment (question 19). This was for reasons of understanding whether the firm's’ strategy targets this customer group systematically or if they do not see this group as relevant. Surprisingly, not a single informant affirmed this question with the intention of actively targeting this firm. Accordingly, C1, C2, C4, C5, C7 and C8 include BoP customers in their customer portfolio but do not address them purposely.

*C1: “BoP customers are part of our target customer groups, but I do not know to what proportion, because unfortunately I miss the numbers. In principle, however, it is so that we address the BoP, because we also look at our pricing.”*

*C7: “Yes, but not per se. (...) But we consider this group implicitly as we align our offer to issues of affordability. And whoever feels attracted by affordability is addressed, which of course includes many from the BoP, but not just solely.”*

In comparison to that, one firm, namely C3, also addresses the BoP in Germany but only partly. By asking this, C3 wants to engage this customer segment more and tries to integrate this group more.

*C3: “This is, of course, also a target group where we often ask ourselves how we can involve them more. Because, there are also products that are not direct competitors, but very strongly cooperate with us, e.g. Die Tafeln, focused precisely on this target group. And we also work together with them. Here too, for example in Denmark, with many organizations for the homeless. So, that is definitely a question that is important to us.”*

Also, C6 sees the BoP in Germany as one of their customer segments but says deliberately, that they have incorporated thresholds to have a client base and solvent customers.

*C6: “Every now and then it happens but we set an entrance threshold which is €29 admission fee and a monthly paid fee. So, you pay even if you don’t drive. We do not collect these data, either, because we do not see what people are doing for a living.”*
Economic-Driven Opportunity
This section is about whether frugal innovation can be relevant for firms in the economic sense when addressing the BoP market in Germany, meaning that firms can still generate financial profit even though they ‘only’ address small budget customers. During the first interview, we decided to ask this question as a follow-up question during each of the interviews to be conducted, we do not dedicate a certain number to it but felt that this question should be included in any case to either prove or disprove our study aim. The responses regarding this question were threefold. While four firms (C1, C2, C5, C8) see financial potential for firms to be active in this market, they say it depends on the context and the industry the firm is present in.

C2: “In principle, I believe, the BoP is not yet fully exhausted. As you have said, you somehow believe that these people have no money and therefore cannot properly consume. At the first glance, this may seem plausible. But I think that these people too must consume and therefore need products that fit exactly to their requirements. And since I see quite a potential, once you go through the classic business, the focus is not focused on the BoP. So, I think so, yes.”

While C3, C4 and C7 see definite potential independent of what the firm does or what industry it is in.

C4: “Oh, yes, definitely. I believe, ultimately, all companies are successful, only if financially something can be earnt. So, it makes no sense to write only red numbers, and every company that decides to offer products for these income classes has, of course, the financial aspect is in the back. And we had also spoken about the size of these people, and the number of these people and I guess that is quite a big market.”

C7: “Yes, of course. Now that you have introduced the term BoP in terms of target group, I believe price-sensibility, income sensitivity, and if one comes from the classical theory of economy, where certain needs are served and you can offer services with the same quality at a lower price, you will find customers to buy it. Of course, perhaps less for luxury products, but generally all other products of your daily life, which you also need to have in a market at the BoP. Therefore, clearly, in any case, this is a relevant market.”

But there is also one firm (C6), who thinks that there is no potential at all in targeting the BoP with FI within Germany.

C6: “I doubt it. It seems to me so much effort for a little solvent customer group. It would not be the first strategy you would think about.”

5.3.5. Requirement for Success
Adaption of Characteristics
In this block, we describe the earlier established product characteristics to define FI in and for the German market. The importance in this section lies in the provided information from our respondents that assess not only the criteria provided but also contribute additional product characteristics that are of essential nature to be successful in this market. Thus, the first question in this pad was about their agreement or need for change for the presented traits (question 20 according to the interview guide). After the inquiry of our eight interviewees, responses were twofold in that sense, that the firms C1, C2, C4, C6 and C8 pitched for no change in product characteristics at first but after questioning them about digitization, connectivity, branding and flexibility, everyone but C4 changed their mind and voted for an adaption of the criteria in their business situation.
C2: “No, I would not adapt it, but I would probably apply some sort of prioritization, because I believe for the BoP, affordability is much more important than environmental considerations. Like putting these product criteria into a scorecard or in a valuation.”

C6: “So the criteria you provided I really liked. (...) We are principally dependent on the digital system computers and on the booking system. Connectivity is quite demanded with larger cars, which must have Bluetooth so that you connect your mobile phone with the car and of course a navigation system. And we will have to do with it because from the perspective of fleet planning, the cars must become more connected.”

Other contestants like C3, C5 and C7 suggested an adaption from the start and provided us with criteria as ‘digitization’, ‘connectivity’, and ‘branding’.

C3: “Yes, in principle. Of course, they differ, in practice, between Germany and a developing country, but in principle, yes. Yes, one can confirm them here in respect to BoP.”

C5: “Branding serves only the prestige benefit. And there is not much you can do about changing the basic benefit, i.e. providing core functionalities. Because this is also a traffic bringer, losing it is much too dangerous.”

Suggestions for Adaption
In this part, we provide the presented results regarding suggested, additional product criteria that their products include or in general, products should have, to be competitive and deliver value. This is important in that regard, that the German market has different needs and customers than emerging markets in which the concept of frugal innovation has been applied to, previously. While our respondents were asked before if they would adapt or change the provided criteria laid down by us, primarily five out of eight firms voted for no change but rather quickly changed their mind when they thought about technologies such as the internet. We will now present the differences in suggested criteria by our respondents. For instance, our informants provided seven additional traits that could be useful or are already useful when talking about products and/or services of frugal character. Starting with the internet, firms C1, C2, C3, C6, C7 and C8 found this trait to be of fundamental importance to be able to operate their organization.

C3: “So, that you can be sure that it is implemented digitally. That it is accessible for many people. And this also satisfies the requirements of our digitization level. That it also works on different terminals. I think this is a prerequisite.”

C6: “We are principally dependent on the digital system computers and on the booking system. Connectivity is quite demanded with larger cars, which must have Bluetooth so that you connect your mobile phone with the car and of course a navigation system. And we will have to do with it because from the perspective of fleet planning, the cars must become more connected.”

Another trait or requirement was provided by stating that ‘online-payment’ is of significant interest for firms. C7 was the only one that recalled this concern but when looking at the products and/or services of our interviewees, it becomes obvious, that this criterion is relevant for several of these firms. However, as we did not receive the according answer of their own accord, we cannot attest this criterion by more than one company (C7).

C7: “Internet, you definitely need it. And you also need some form of online payment.”

Further preference for adaption also came from C5 and C6, suggesting an additional trait, namely ‘marking’ or ‘branding’, which means that higher valued brands that stand for price and quality are usually more popular.
C5: “But if you go out on the street, you need brand-new shoes. Even in countries where you think people earn almost nothing. These are rather market symbols, especially Western consumption, is very important. (…). Branding, yes exactly. I might add.”

Another two firms (C2 and C3) put emphasize on the flexibility trait for firms to be able to adapt to changing customer needs in times when there is fast technological change.

C2: “You need to be flexible to adapt quickly, if one notices the customer would wishes it to be different.”

Another suggestion was the apposition of ‘social inclusiveness’ (C3) into the production and distribution of products and/or services which we have interpreted from his statement to consider and solve societal social problems.

C3: “So I would say that they are not just simply solving a particular individual social problem, but above all contribute to the fact that this population layer has more possibilities in general. So, when a frugal innovation very much solves a single problem, then this is certainly good, but it should also generally support this society. That these people generally feel more tied to the rest of society.”

Contrariwise, C1 proposes the development of new products regarding this customer segment instead of considering the single criteria we suggested when talking about FI.

C1: “(…), it should simply be completely new products. So not just somehow have the approach of: ‘I have a product, and now to reach people with low incomes, I must take away something from it, so that can then consume that for a lower price’, but, I believe the focus should be synonymous to say: ‘When I find this target group exciting, what can I really create with necessary new features, which just exactly appeals to these people.’

Apart from that, C2 and C4 think there should be a prioritization of the single elements that FI should have, even though C4 did not add any criteria like C2 but later decided that the internet is important anyway.

C2: “No, I would not adapt it, but I would probably apply some sort of prioritization, because I believe for the BoP, affordability is much more important than environmental considerations. Like putting these product criteria into a scorecard or in a valuation.”

C4: “In principle, I would say that we can stick to the criteria we discussed above, also at this point. If I now however look upon the field of BoP, then I would say the affordability issues perhaps gets even more important than it was before. The same applies, incidentally, to usage orientation. What is perhaps less important is the issue of environmental concerns, because within this cluster the existence minimum is more important than the sustainable thought of the environment.”

**Alternative Connotation**

As we asked if the respondents know a different term for the BoP customer segment to avoid overlapping or using different notions for the same concept, we did the same for the product criteria of FI (question 21). The results were surprising in that regard, that seven out of eight representatives (C1, C2, C3, C4, C6, C7, C8) knew no synonymous perception of the presented traits, whereas C5 introduced the term ‘downgrading’ to us, meaning that the product is simplified to its most functional features.

C5: “There have always been these downgrading approaches, i.e. the simplest functional things, but most of the time, the most basic functions.”

**Requirements for Success**

This section is in accordance to question 22 from our interview guide. From the literature, we presented four requirements (4A’s, see figure 7) to our participants that are
necessary for firms to be successful in BoP markets. Since we included these requirements into our preliminary framework to qualify our research contributions and findings, we wanted to know how critically firms see these conditions to be successful. We confess that we basically verify a given set of requirements, i.e. the 4A’s, but the theory to be extended will be based on additional and graded requirements. Correspondingly, four firms (C2, C6, C7, C8) considered all of the provided requirements of utterly importance to be effective.

C6: “I find all four very comprehensible. So, affordability is clear, the price is important. Availability logically, it must be available, Awareness, I am not sure what perspective of Awareness is meant, maybe that people know about it? And acceptability, that is just really used. I find it all comprehensible.”

C7: “Absolutely. This is also a mixture of the famous product market-fit, in our normal marketing strategy. Awareness, I believe this to be a point, a topic what every product has. Of course, you need awareness. Availability of course, too. Clearly, if there are no rides available, then they cannot make use of this and we do not make any money. This is totally relevant for the BoP market, actually it is relevant to every market or target group, not just for the BoP.”

There were fluctuate differences among the firms that did not find all of the four A’s relevant. Some put more emphasize on single A’s, whereas other firms agree with two to three elements. For instance, all our contestants found the factor of ‘affordability’ of importance, only one, namely C1, did not comment on this aspect even though ‘affordability’ was as product feature approved by all eight firms. Furthermore, ‘awareness’ (C2, C3, C5, C6, C7, C8) and ‘acceptability’ (C2, C4, C5, C6, C7, C8) seem to have an equal stance with six out of eight firms that find it relevant for their organization. Again, C1 did not comment on either of them, while C4 simply did not find ‘awareness’ as important and C3 did not comment on awareness.

C4: “Personally, I would say that awareness is not too important, because I believe every target group knows which providers are there for their interests. Since the income situation is specific to every consumer, he or she knows which providers suit the most.”

Lastly, there is ‘availability’, while firms C2, C3, C6, C7 and C8 supported this aspect, C1 again did not comment and C4 as well as C5 found it not relevant or important.

C4: “So, first I would say that availability is not quite as important. Clearly, products must be available to the customer, but overall the topic in Germany is not quite as important as we have a very good infrastructure.”

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5.3.6. Value Creation of Frugal Innovation
The last block of the interview guide contains two questions about the created value (question 23). For further categorization of the value contribution, we applied the elements of the triple bottom line by Elkington (1999) but did not regard it as sustainable development, which we have already stated in previous parts of this thesis (see 2.1.2.). Even though, some of our contestants mention a social, environmental and/or ecological value platitude as an important feature of their product throughout the
interview, we raised this question again to justify previous notions from our interviewees.

Social Value
The first suggested value created was of social nature. One could generally infer that those companies who aim for ‘participation’ in life when asked for motivation to develop products for low income customers (see 5.3.2.) have a strong social focus. In fact, it is the same number of participants who answered accordingly, even though some did not mention the participation aspect previously, like in case of C2. Nevertheless, six participants approved the social value in their product while two companies (C2 and C5) denied it.

C1: “Regarding target groups including the BoP concept, we make it possible for people to travel, which would otherwise not be able to do so frequently. This is what we are proud of. We are proud to be able to provide long-term relationships, and we are proud of the fact that we can support family visits more than before.”

C6: “So from a social point of view, we naturally make sure that car-sharing cars replace the self-bought cars, and depending on the investigation you are doing, a car-sharing car replaces between 7 and 15 private cars.”

Economic Value
The next pillar for our investigation is about the economic value created from the interviewees products and/or services. Our subjects under study often referred to economic value for the customer and less for the company, but we understood that in nearly all cases, except for C3, all companies see themselves as entrepreneurs, hence pursue economic interests. This becomes clear in the answers from C2:

C2: “Economically certainly (...). So yes, we have also economic considerations, the customer pays less but we did not develop the product for them to pay less.”

After we turned this discussion to economic value for the company, he also agreed and answer accordingly:

C2: “So I say we are all entrepreneurs and economists and so we want the company to be profitable and survive.”

Generally spoken, in total six out of eight of our participants agree on this pillar and see it incorporated in their product.

C1: “Yes, so it would not be economical for us if our partners are not happy. C1 has 250 bus partners, which drive for us and of course only works, if they benefit correspondingly. (...) We want to build a sustainable business model, which is not only ecologically feasible, but also, of course economically, and which also promotes our partners.”

C5: “Economically, clearly, you can make money and one can achieve a positive value (...) In so far, there is a large economic contribution, but I do not see social benefits.”

In turn, while C8 did not explicitly mention economic value for the firm, she mentions economic potential for customer as soon as a certain number of kilometers is not exceeded. We still categorized this answer as ‘no economic value’ because it is strongly linked to a condition. However, only C3 answered this question undoubtedly negative and proposed that economic value is not relevant. The economic value only comes in form of financial compensation for the partner companies of C3.
C3: “I believe that makes sense. We want to cover our costs, but there are other companies where this economic approach is more important. And then there are also opportunities. There are many people and they must live somehow.”

Ecological Value
The third pillar of the triple bottom line by Elkington (1999) refers to ecological issues and contributions to protect the environment. In total, again, six participants (C1, C3, C4, C6, C7 and C8) approved this criterion, from which some, e.g. C1 and C3, have this idea already incorporated as starting point of the company. In the first place, we will demonstrate answers that acknowledge the ecologic characteristic.

C1: “(...) we have a strong ecological component. As we are green, we are happy for every car taken off the street because people use the bus.”

C7: “Ecologically is fairly clear. This is ultimately about avoiding CO2, or that one avoids pollutants. (...) Also, resource conservation because fewer cars would have to be produced, and less fuel would have to be consumed, if our services were used even more frequently. So ecologically quite clear.”

On the contrary, only two companies (C2 and C5) deny this notion of ecological value, from which one representative (C5) not only denies it but rather sees strong inherent dangers as it can be seen in the following quote.

C5: “Ecologically, it is likely to be a catastrophe because the products are not durable and have very short life cycles and have to be replaced all the times, so ecologically, I see them rather as catastrophe. (...) But important, from my point of view, is the ecological disaster.”

Presence During Development
It was of fundamental importance for us to analyze whether the value contributions that the participants described in the previous question were also predominant factors in the development stages. Interestingly, while six participants mention economic value previously, only three confess that this approach was prevalent in the development of the product. Companies that stated economic interests right from the start are C1, C2 and C5.

C1: “Yes, definitely the economic factor. Our founders had to approach one partner after another and make the concept appealing. So of course, something that immediately had to be kept in mind.”

C5: “To make money. Just like Kik and Tedi (…) who know exactly what they are selling. It is not that this is caused by chance. And it is the basic function of marketing to address certain target groups and to specifically sell products to them.”

C4, another company that previously confessed to have economic interests, also mentions social interests but less environmental considerations. We therefore combined the two features to ‘social/economic’.

C4: “So, I think that right from the start these two points were considered important. Perhaps the economic factor is a bit more important, as our bosses have seen a gap in the market. We are also classical entrepreneurs, and consequently we must secure ourselves financially as well.”

Furthermore, three interviewees attested social-ecological interests to be influencing the development of the product. These are C3, C6 and C8. In case of C3, the approved social and ecological interests were predominant right from the start.

C3: “No, from the beginning was just as planned. There is also not so long, from now has not changed.”
C8: “It was mainly about the ecological and the social part of those days and that they really one day live and profit from it, that was not so the main motivation.”

Important to mention however is that in case of C6, the economic value that was confessed in the previous question, came into play after the initial product launch. This traces back to previous legal forms of the company as it was organized cooperatively instead of privately and therefore economically targeted.

C6: “No, the economic part came later. It started with the ecological and social at the same time. This can be seen in the fact that many companies like Stadtmobil Group or even competitors were founded earlier as registered associations or as cooperatives or what else legal form they may have had. But if you have a certain size of fleets, about 20-25 cars, you can be sure that this is organized more economically and so it has happened that there is partly also the double structure of a GmbH and an association. That is then practically a partner with a GmbH. This is the reason why the economic criterion is only applied in the second step.”

The last category is based on the provided information by C7, who approved all features to be of influencing character during development as well. Therefore, all three pillars were present in the past during development are still part of the strategy.

C7: “So, the company was originally called ‘Covoiturage’, it is the French counterpart to ride. So, we have always had the social aspect coming into play. And that is has always been ecological and economical is based on the nature of the idea. I also do not know any other product and no other company that has anchored these three aspects in its DNA.”

5.3.7. Summary of Empirical Results
To enhance a better understanding of the empirical study results we collected, and to offer a better overview for the reader of our thesis, we created one table containing the results in a summarizing format. This table can be found in appendix 13. The table thus allows the reader and us to compare results across the cases and to decrease the complexity for creating the substantive theory accordingly. This will be of particular importance in the next step, i.e. the in-depth analyzation of the data to extend theory as it follows the analyzation techniques of GT.

We were generally glad about the results that we received from our interviewees as they would help us to revise our framework and to expand a more suitable substantive theory for the concept of frugal innovation in the context of developed countries, in special Germany.
6. Data Analysis and Discussion

The following chapter will serve as an in-depth analysis of the empirical results that we presented in chapter five. The analysis is, just like the previous chapter, aligned to the deduced final categories that are the outcome of the different coding processes in the GT methodology. Thus, the overall aim of this chapter is the demonstration of the connection points across and within the six categories based on the answers we received and illustrated previously. We will show and analyze the collected qualitative data aligned to the interview guide in order to revise our preliminary framework and to pursue our study purpose. We will constantly refer to our assumptions from the literature review (chapter 2) to make connections between theory and practical findings while establishing the foundation for answering the research questions.

Important to mention at this point is that we incorporated a variety of companies from different industries that in turn offer different products and/or services. As we assumed that this concept is not adequately known in Germany, we believed it would be beneficial to analyze a broader perspective as introduction and foundation for further research. Even though, one might argue that comparability between each interview company will be limited, we still believe that the ‘bigger picture’ would be most suitable to investigate the complex concept of frugal innovation in a formerly uncommon context, i.e. Germany. As precursor for the in-depth analysis of our study data, we honestly state that the theory extension of the FI concept is based on the eight conducted interviews and on the performed analysis techniques of grounded theory. Speaking about a ‘big picture’ may be questioned, however we are still convinced that the variety and differences between the interviewed firms lead to a higher level of abstraction.

6.1. Background Information of Interviewees

In this section, we analyze the first set of our interview guide for a basic understanding about the background of our interviewees. This consists of their influencing factors, core customers and market focus.

We already described that the two introductory questions from the interview guide, i.e. questions regarding personal background of the interviewee and offered products of the company would not be helpful in the analysis of the concept of frugal innovation. Yet, these two were mandatory to ask, not only to make the interviewee familiar with the interview situation but also to validate if our decision to include this specific company in the research was the right decision. However, for further analysis, these two questions won’t be of high importance. We exclude them from the direct analysis but keep them in mind to justify the analyzed findings as they are strongly connected to the products offered by the companies.

Influencing Factors

In section 2.1.1, we referred to Schumpeter and his notion to consider entrepreneurs as individuals that are able to find new combinations of means to turn them into economic growth (Carland et al., 1984, p. 354). Moreover, the recognition of opportunities is also considered requirement for entrepreneurs to be legitimately labeled as such (Shane & Venkataraman, 2000, p. 223; Ardichvili et al., 2003, p. 109-111). The overall aim, however, is to create value, unbiased from the nature of that value, what we will specifically analyze at later stages. We acknowledge that we took a very straightforward position when we defined entrepreneurship as precursor for frugal innovation, also seen in figure 3 depicting the importance of entrepreneurial motivation. This leads to specific
action of entrepreneurs to satisfy the personal desire to recognize ideas and to create value. According to Patzelt & Shepherd (2011, p. 640), the motivation to create value is highly dependent on the entrepreneur himself. This motivational aspect is the core of this first analyzed set of answers. We were interested and believed it to be of major importance to see differences in the influencing factors that impacted the development of the product. As we included a variety of companies from different industries, we expected to receive broader sets of answers. We have presented the answers and our expectations were met in the sense, that we received eight different influencing factors from which some were stated multiple times. However, while tracing back to either opportunity-driven or sustainability-driven entrepreneurial motivation (Parrish, 2010, p. 510-511), we can distinguish these eight answers accordingly. Therefore, three of our interview partners and the according companies are rather profitability-driven. We include the preliminary categories of law, market change, flexible product and profit orientation. On the contrary, five companies attested a rather sustainability-driven approach. Most outstanding in this sense is the notion of two companies who called ‘societal problem-solving’ as a major anchor point for the idea of their product. Another important point to mention was the ‘environmental movement’ that refers strongly to environmental protection as their guiding principle for business activities.

We can conclude, economic/profit-driven idea development is not always at the foreground. However, the majority of our subjects under study confessed a sustainability-driven approach. We will also see in later stages of this analysis, the value contribution of a product is also not always of economic nature but connects to other pillars from the triple bottom line which we labeled as elements for value creation (Elkington, 1999, p. 397).

After analyzing the results from the first question, one could argue that our underlying assumption, that the prevailing entrepreneurial motivation in the field of frugal innovation is more likely to be opportunity-driven, does not seem to be correct anymore. However, seven of our contestants later attest FI to have general economic potential (some see it context-dependent though), as the majority see themselves as entrepreneurs who could not survive without considering financial aspects. Therefore, we confess, that even though economic-driven entrepreneurship may not be the core idea in development stages, but throughout the process to launch and run the companies, the economic idea becomes more and more important, i.e. survival of the firm.

Yet, we can observe from our empirical findings, there is a strong sustainable-driven character of the products that we identified as being frugal. We therefore see strong linkages between sustainability and entrepreneurship leading to the approval of the concept of sustainable entrepreneurship laid down by Belz & Binder (2015, p. 2). It becomes a rather interesting insight that frugal innovation is highly connected to social entrepreneurship, i.e. the respect of social value as being superior to financial value (Pervez et al., 2013, p. 56). Summarizing, we conclude that social and ecological aspects concerning their value creation are important factors in the field of frugal innovation, as they are almost always accompanied by economic issues. Regardless of these findings which we generally acknowledge, we decided to not further develop this new discovery since it is not in line with our study purpose and would like to refer to future research at this point.
Core Customers
The next aspect in our analysis refers to question seven (addressed customer segment). Interesting and surprising was the fact that our interviewees do not target a specific customer group but address a wider range of people, particularly the bulk of customers (‘masses’). Naturally, these involve low-income and price conscious customers, also mentioned by our informants and additionally get confirmed by a variety of authors (e.g. Hossain et al., 2016, p. 134; Soni & Krishnan, 2014, p. 31; Knorririga et al., 2016, p. 144; Khan, 2016, p. 7; Lehner & Gausemeier, 2016, p. 14) that state the existence of price-sensitive customers also in developed countries.

Albeit, people from developed countries can draw upon other financial standards than in emerging markets, some of our received answers proved our assumption of the presence of price-sensitive customers in those markets as well. Especially one answer brought forward, refers to the concept of thriftiness, that is not only incorporated within customer behavior of the BoP, but also represented in every other income group.

Hence, we conclude, we feel vindicated by the answers, that FI strongly refer to income situations amongst customers. Therefore, and confirming the Keynesian idea of economics, one major influence on customer behavior is income (Friedman, 1957, p. 3; Guesalaga & Marshall, 2008, p. 414). While the gap between rich and poor people is generally rising, the development in Germany is stable (Mallien & Häring, 2016). Accordingly, price-sensitivity and aspects of affordability are core concepts of the products of our research participants which corresponds to the original conception of frugal innovation. Contrasting the original concept in terms of core customer group, yet confirmed by the Ernst & Young (2011) survey that we introduced in the beginning, we may not neglect that half of the interviewees mention the masses to be their major target group. As this answer is of broad character, we still believe it to be of vital importance, as it seems that FI do not solely address low income households. This becomes even more obvious when considering the long-lasting success of the Swedish furniture company Ikea, whose products would general count as frugal, incorporating its target group, which also refers to the masses (Agnihotri, 2015, p. 402). Those findings show, that the ‘frugal’ firms we identified are indeed addressing the ‘right’ customer segment in terms of frugal innovation, which will be more explained in section 6.4.

Market Focus
Based on great general differences between countries on a global scale, we wanted to find out whether market activities are solely carried out in developed countries, or if emerging markets also belong to the core target markets of the company. We already referred to the United Nations Statistics Division (2016) mentioning that a clear designation between developed or developing countries is lacking. While the answers range on a continuum from regional to global, generally all kinds of countries with different human development index (HDI) could be included. However, one participant solely related their service to industrialized countries.

Also, the most mentioned answer was ‘Europe’ as being the focal market for their corporate activities. Generally, Europe, next to Japan, Canada, USA, Australia and New Zealand are considered to be developed ( UNSD, 2016). Furthermore, we also examined a gradation and referred to the Western European countries (German Society of Country Lore, n.d.) as being developed. In some cases, the term ‘Europe’ stands for a rather limited number of served countries, yet activities did not exceed the boundaries of
Europe. Therefore, almost all interviewed companies are active in developed parts of this world, independent of the discussion whether single parts of Europe are potentially less developed than others (Podkaminer, 2013, p. 2). What we can see from these answers is, that the interviewed companies that allegedly offer frugal products are still active in geographical and economical affiliations of this world, that are generally considered developed according to the Human Development Report (UNDP, 2015, p. 208-211).

We therefore generally believe that FI are not solely relevant for emerging markets, but can also be and are already applied and relevant in developed countries according to our findings. What we will see in later stages of the analysis though, is that the frugal innovation concept, as it is known from emerging countries, should be revised to serve the needs of customers in developed markets. These needs that appear in form of desires of certain product characteristics, are significantly different from those in developing countries as indicated in our literature review and will be taken up when answering our second research question.

However, what becomes clear after we have analyzed the first category of ‘general information’ is that even though frugal innovation is a concept, preliminary connected to emerging countries, it is likely to be also found in countries of higher development stages. Moreover, the influencing factors during product development stages are according to the results of our mostly of sustainability-driven character while the financial-economic perspective also plays a major role. Addressed customers are not solely of low income segments, however the aspect of offering thrifty products seems to be the core idea which appears to be a phenomenon connected to, but not exclusively, low income households.

6.2. Frugal Innovation

_In this thesis, we investigate the state of application of frugal innovation in the extended context of Germany as a developed country, whereas the concept is previously known and connected to emerging countries. The extension to a different economic environment is therefore the core of our paper. This block of question aims to analyze the concept of frugal innovation itself, while previous and following sections help to grasp the overall picture of the concept of frugal innovation. Hence, we have to be careful on how to analyze the different sets of categories that enable us to pursue our research purpose._

State of Knowledge

We investigated the state of knowledge of our interviewees by raising the question of familiarity with the concept of frugal innovation. While the concept is generally rather unknown, we expected some of the answers to be negative, i.e. meaning that prior knowledge is not available. Yet, none of the interviewees were familiar with the term before we introduced it to them. Some participants mentioned this concrete lack of knowledge explicitly. However, what all subjects had in common was some form of preparation for the interview.

From a structured perspective, one would handle the terms ‘frugal’ and ‘innovation’ separately, as we did in this thesis (Bhatti, 2012, p. 1; Soni & Krishnan, 2014, p. 33). While we assume the latter does not cause any form of misunderstanding, the term ‘frugal’ or frugality seems to be the major cause of confusion. Astonishingly, the word
frugal also exists in the exact same form in German, however it is not commonly spread, apparently. While the given definition about frugality by Lastovicka et al. (1999, p. 88) refers to acquisition and usage of goods for achievement of longer-term goals, the German term frugal refers to a simple and not opulent way of living (Duden Online Dictionary, 2017).

This notion is important in so far, that we would typically deduce a lacking occurrence of the concept in the context of developed countries. However, during our thesis, we observed that the term itself seems to be new, while the concept is applied in some form. Another possible explanatory approach could be that the term might be known, however gets mixed-up with other types of innovation (Weyrauch & Herstatt, 2016, p. 1; Hossain et al., 2016, p. 133, Brem & Ivens, 2013, p. 36; Pansera, 2013, p. 470) and therefore leads to some form of confusion. However, this is rather unlikely as none of our participants was familiar with the concept.

**Definition of Frugal Innovation**

In line with the previous section, the definitions provided by our informants would be mostly based on their efforts to prepare for the interview. We generally state that the overall amount of available literature is scant, yet, we still received interesting insights about how each interviewee understood the concept according to the examined source to inform themselves.

The first deduced category is ‘value creation’. The interviewee did not explicitly mention the type of value that is created, however, sees concrete value contributions as the outcome of frugal innovation. This is in line with the notion by Angot & Plé, (2015, p. 4) and other authors (e.g. Rao, 2013, p. 70; Horn & Brem, 2013, p. 944) who highlight the business value and social value generated through this type of innovation. The interviewee also attested our definition of frugal innovation (‘thrifty, modest and affordable innovations, valuable for BoP customers’) as we also see a strong form of value creation for a specific group of customers.

Furthermore, the suggestion of one participant respecting the concept as invisible innovation which becomes ordinary during the course of time through general use is something new, that we have not found in the according literature. We assume that the general knowledge about frugal innovation are commonly agreed upon by scholars, even though a unifying definition is lacking. This interviewee linked both terms to products that are not introduced with ‘noise’ and complex marketing engagement but will become ordinary during time through price decrease. We found this component highly informative and educational but did not integrate it into our revised framework due to the lack of support from the other interviewees.

The same applies for the aspect of ‘scalability’, put forward during our last interview, meaning that the product should be made available for as many people as possible. From a global perspective, the 4bn people that build the BoP (Prahalad, 2005, p. 4) could serve as the called focus on the masses as potential target group, despite the criticism by a variety of authors (e.g. Karnani, 2007, p. 91; Pitta et al., 2008, p. 395; Anderson & Billou, 2007, p. 14; Karnani, 2007, p. 91). Therefore, it would not add any new insight, but supports our assumption that FI is a means to scale up the product to large customer groups. Further, we believe that it still fosters our assumption of focusing on the BoP, even when considering the market focus of the interviewed companies that is mostly in
developed parts of the world. This is in line with other called notions like ‘low income focus’, ‘price focus’ and ‘affordability’ which are mentioned multiple times by varying interviewees. Therefore, we see strong connections to the definitions about frugal innovation that we presented in section 2.1.4. There, we stated that affordability is a unifying feature, i.e. most of the found definitions incorporate the concept of affordability (Hossain et al., 2016, p. 132; Simula et al., 2015, p. 1568; Basu et al., 2013, p. 64). Thus, we see the element of affordability as superior to others, whereas others contribute to the aim to serve affordable products. We also see a strong connection to the previous part of price-sensitive customers that are not income-bound but can rather be found in varying income classes. Hence, we approve the notion by Le Bas (2016a, p. 4), namely that FI are concerned with being operated in low-resource environments.

Another stressed definitional part refers to ‘core functionality’ and can be found in half of our respondents’ answers. This will also be further explained in the section of product characteristics but core functions and the main idea of the products are also in the foreground of frugal innovations. This understanding can also be found in the literature (e.g. Agnihotri, 2015, p. 401) and refers, if enhanced by ‘easy-to-use’ (Hossain et al., 2016, p. 132) and good quality (Center for Frugal Innovation in Germany, n.d.), to modesty of the product.

While our definition consists of a variation of sub-concepts, i.e. thriftiness, modesty, affordability, value and BoP, we see them all approved by the answers of our interviewees in our study. Hence, this definition could work as a unifying notion for the concept for further investigation, which we strongly advise other researchers to do in the future. In earlier stages of our thesis, we developed a long and complex definition but later decided to decrease complexity and focus on the core components that are, in fact, incorporated in the ancient term ‘frugalis’ (frūgālis). We feel that sticking with the original meaning defines FI at the best possible way in that sense, that room for interpretation is given to the reader and user of our definition but not too much. One core assumption was offered by another interviewee who used the connotation of ‘more for less’. This is also suitable as we used a similar connotation for the concept, as seen in figure 5.

At this point, we want to clarify that we could also validate the criticism laid down by us that according definitions found in the literature are broad and leave room for interpretation about the market of application. Yet, the concept of frugal innovation is commonly connected and applied in developing countries (Horn & Brem, 2013, p. 944), which could not be confirmed through our research. In this sense, none of our interviewees explicitly mentioned the developing countries as the target market, while only one contestant referred to ‘countries of the south’. We therefore feel vindicated that the open-minded approach of confirming the existence of the concept of frugal innovation is not limited to emerging countries, but also finds application elsewhere, i.e. in more developed regions of the world. Without being too overly optimistic about our findings though, one possible explanation for not mentioning developing countries is of course the missing focus of our interview companies on markets like India or Bangladesh and lacking state of knowledge about the concept in general. Yet, we still believe that while giving the interviewee the opportunity to express themselves, they could have referred to these markets as well.
Motivation to Address Low Income Customers

As we generally connect FI to low income customers (Hossain et al., 2016, p. 132), due to its features of affordability and being ‘less pricey’ (Simula et al., 2015, p. 1568), we received answers regarding the motivation, to address these customers directly. While the economic importance was only mentioned once at this point, we would generally refuse to take this notion into further consideration. However, nearly all, except for one, acknowledged economical reasoning in their product (see 5.3.6.). Therefore, as economic importance could also overtake the customer perspective, this conception can be connected to ‘affordable products/services’ which was mentioned as another motivation. It would then be considered approved of the low income and affordability-defined criterion of frugal innovation (Basu et al., 2013, p. 64; Hossain et al., 2016, p. 132) which we were able to justify before. However, another approach to conceptualize ‘economic importance’ connects to ‘market saturation’ of higher income classes, that we deduced from the answers of another study participant. Both would then refer to gaps in the market that can be further exhausted. To prove this assumption, we stated the question of economic-driven potential for FI in later stages. With reference to the bottom of the pyramid, certain customer groups are allegedly not served sufficiently and would in turn open economic potential in these formerly untapped markets (Tiwari & Herstatt, 2012, p. 97; Prahalad, 2005). It therefore directs towards inclusion of particular target groups (Knorringa et al., 2016, p. 148).

Another preliminary category that we could deduce from the interview extracts was ‘participation in life’. Angot & Plé (2015, p. 4) mention the social value generated by FI which can be further complemented by the statement that “frugal-innovations have a lot to offer for sustainable-development (Rao, 2013, p. 66)”. As we were surprised by the impetuosity of this call, we can connect it to the social pillar of value creation (Elkington, 1999).

From a rather objective viewpoint, one gets tempted to speak of a ‘win-win-scenario’ in which the companies can benefit from opening up economic potential and in which social participation and inclusiveness is also fostered. This would be in line with several publications found in the literature (Knorringa et al., 2016, p. 144; Pansera, 2013, p. 470; Pitta et al., 2008, p. 399; Hall, 2014, p. 266; Dolan, 2012, p. 3). We concede that criticism can also be found in the literature but the answers by our interview partners lead us to the direction to generally see frugal innovation as a promising attempt to create a win-win-situation.

Assessment of Importance of Frugal Innovation

Even though we have identified the target companies as offering FI and despite the critical self-reflection at the end of the next block of questions, we wanted to hear first-hand assessments of the general state of frugal innovations in Germany. From the interview results we can thus convey that the general presence of frugal innovation in Germany is at hand. Yet, one must make clear cuts as not all seem to be agreeing. We based our assumption on according literature, that frugal innovations also become more important in countries of the Western countries, as external factors such as demographic changes and income changes due to the financial crisis in 2008 led to new market conditions (Radjou & Prabhu, 2013; Le Bas, 2016b, p. 20; Rao, 2013, p. 65; Zeschky, Widenmayer & Gassmann, 2014, p. 257; Angot & Plé, 2015, p. 13; Knorringa et al., 2016, p. 144). The interviewees therefore seem to approve a shift from mostly high quality products towards need-oriented and affordable solutions with core functions and
consideration of environmental issues (Herstatt & Tiwari, 2015, p. 2; Le Bas, 2016b, p. 16; Levänen et al., 2015, p. 6; Hossain et al., 2016, p. 133; Simula et al., 2015, p. 1567).

We conclude that we generally feel confirmed in the intention to analyze the potential of frugal innovation in the context of Germany as representative for developed markets.

**Abstraction of Examples**

The question regarding further known examples would serve as evaluation for us, if the interviewee can abstract other examples based on the definition discussed previously. However, we confess that this abstraction would barely benefit the analysis of the concept itself, but it would most definitely help to estimate the overall state of frugal innovation in Germany. Tracing back to the first research question about the current state, we could infer from the answers whether other examples are known to the interviewees.

Our findings would generally lead to the assumption and proposition that FI are, in fact, a concept that is already applied in developed markets, since most of our participants were able to refer to further examples of the concept. It would then automatically refer to the question of why not a single interviewee was familiar with the term beforehand to which we will come at later stages. Yet, we interpret this circumstance as confirmation of the application of FI in Germany.

This last analysis, even though not of utmost importance, still contributes to the first research question as it seems to answer the question positively. Therefore, we conclude that frugal innovations are generally applied, but are not known under the allegedly appropriate term. This goes in hand with what we analyzed in the definition section, where multiple sub-concepts of our definition are either approved or even advanced through new insights. Thus, one of the major findings of our research is the existence and the practical implementation of frugal innovation in Germany, even though different connotations were not used. We see ourselves confirmed by the answers we received according to the motivation for addressing low income segments as they suit the findings in the prevailing literature. These circumstances lead us to the rejection of the assumption to see low income segments not as valuable customer group, which is why the BoP has been neglected for long times (Prahalad, 2005, p. 10; Sinha, 2013, p. 71).

**6.3. Product Characteristics**

Earlier, we have stated what each respondent mentioned about the product characteristics that are usually incorporated in FI, deduced from practical examples from emerging markets like the Nokia 1100 (Angot & Plé, 2015, p. 13; Agnihotri, 2015, p. 403) or battery-driven cool-box Chotukool (Le Bas, 2016b, p. 11; Tiwari & Herstatt, 2012, p. 107). In the following, we will now analyze the empirical data concerning the characteristics of frugal innovations. As we interviewed companies that are predominantly active in developed markets, the following analysis is inseparable to the context of developed countries.

**General Seven Criteria Found in the Literature**

Looking at table 3 (see 5.3.3.) we can clearly see that some criteria are more important than others. We must therefore compare each line with another to see where most respondents answered positively to the according criterion. The most called, thereby leading to the impression to be most important criterion, is the issue of affordability.
Thus, we feel obliged to respect affordability as a core criterion within the concept of frugal innovation and superior to other criteria (Hossain et al., 2016, p. 132; Simula et al., 2015, p. 1568; Basu et al., 2013, p. 64). Moreover, as some of our participants mentioned, affordability must be of superior importance, just because other criteria are a simply means to achieve lower retail prices and to ensure affordability. This leads us to develop some sort of gradation to prioritize some criteria according to the answers we received in terms of number of confirmations for each criterion.

As stated, we can analyze the data in that sense that affordability is the most important criterion to which lower ranked criteria contribute. We would accordingly set ‘affordability’ with total of eight calls as 1st tier criterion. Accordingly, we categorize those criteria as 2nd tier criteria that score medium scores in the sense of total number of mentions, i.e. from five to seven calls. Accordingly, core functionality (Brem & Ivens, 2013, p. 41; Basu et al., 2013, p. 67), usage-centered (Rao, 2013, p. 66), environmental issues (Weyrauch & Herstatt, 2016, p. 5; Kuo, 2014, p. 4), and ruggedization/reliability (Weyrauch & Herstatt, 2016, p. 5; Basu et al., 2013, p. 65; Mukerjee, 2012, p. 1) must be categorized as 2nd tier criteria. The other two provided criteria, namely performance level (Rao, 2013, p. 67) and no-frills strategy (Khan, 2016, p. 6; Hall, 2014, p. 267) must be labeled 3rd tier criteria as they score only four calls. We would include all lower scores as 3rd tier as well, but four was the minimum of calls.

These findings are very formative for grasping the conceptualization of necessary product criteria properly. As we have defined these seven deduced criteria as belonging to higher categories, i.e. thrifty, modest and affordable (see figure 6), we now must actively engage in a prioritization process as some of them are not equally important as others. At the end of this section, we will create a unifying figure that will incorporate the different findings from this section and will also ensure the prioritization of criteria.

**Reflection of Frugality**

In total, we reduced the number of product criteria found in the literature to seven core criteria which we analyzed in terms of importance in the first part of this section (Kuo, 2014, p. 4; Basu et al., 2013, p. 65-66; Kuo, 2016, p. 3; Rao, 2013, p. 67; Weyrauch & Herstatt, 2016, p. 6-7; Angot & Plé, 2015, p. 4; Sinha, 2013, p. 71, Khan, 2016, p. 8). The final question in this block of the interview-guide aimed to engage our interviewees in a critical reflection process in which they would consider their own product as frugal or not. Despite, that only one subject under study strongly rejected this notion, all participants see at least four of the seven criteria included in their product. Two companies on the contrary answered positively to all seven criteria.

The most important finding however is the answer by four companies, that state a ‘limitedly frugal’ as self-reflection. While they can generally refer to the criteria laid down by us and which are found in the literature, they still cannot fully identify themselves with the concept. This can either be because some criteria are less applied in their product, or that the concept is still not known enough to them to rightfully acknowledge being frugal. Nevertheless, seven out of eight companies stated to be limitedly frugal or completely frugal according to the criteria. From this distribution, we can derive again that the concept itself seems to be applied in Germany according to our study result, however the term itself is not known, leading to a certain amount of confusion among our interviewees. This finding was also the outcome of the previous section, which can now be considered approved. Accordingly, by looking at the
companies and their products under scrutiny, we believe, that the concept is, in fact, applied, but can neither be found under the term of ‘frugal innovation’ nor show the same criteria equally to examples from emerging countries. The analyzed findings in this chapter, combined with the description of adaption of criteria will be shown in graphical form in appendix 14. Therefore, we present the mentioned prioritization of criteria according to their level of importance.

6.4. Bottom of the Pyramid in Germany

This section is about the BoP and the general assumptions we had in the beginning that now get narrowed down to the German context. The pertinent questions directed to our study participants resulted in rich data. For instance, all informants except for one were knowledgeable about the term ‘bottom of the pyramid’ in general and linked it to the factor income when defining it.

The results show, that fundamental understanding about concepts in terms of poverty and consumption exists in the German society, although not in the scope of its full extent and range. According to our literature review (see 2.2.4), people from the BoP are generally known to be in the lower income segment, therefore get associated with poverty and are lacking in education and desire affordable products (Bharti et al., 2014, p. 172). These facts got confirmed when we asked our respondents to define the BoP. Surprisingly though, the parameters described to define the general BoP were the same as the ones referred to when asked in the context of Germany and its targeted population. Resulting in ‘low income’, ‘poor’ and ‘unemployed’ as the most mentioned in this regard. Even though a bottom of the pyramid has not been defined yet for the context of Germany (Simula et al., 2015, p. 1), our contestants affirmed our definition of the BoP for this context, based on the given poverty threshold in Germany that in turn include the categories named above as well as ‘least possibilities’ which implies this part of the population. Consequently, independent resources (our participants), unconsciously verified our definition and establishment of a bottom of the pyramid in Germany. Furthermore, we need to mention that some of the firm’s representatives conjectured that there is no BoP in Germany when comparing it with the BoP in emerging countries that accounts for 4 billion people (Prahalad, 2005, p. 4). We talked about the possibility that in practice, top-of-the-pyramid countries are likely to have their own bottom of the pyramid population (Angot & Plé, 2015, p. 3; Hossain et al., 2016, p. 137; Piacentini & Hamilton, 2016, p. 137). This assumption got verified, especially when our respondents got confronted with our definition and thus, the number of people (16.7 % according to our calculations in 2.2.4.) that belong to that segment, they were astonished and agreed with our assessment.

Proceeding, we also talked about the consideration and acceptance of the defined customer segment, i.e. bottom of the pyramid in Germany. The result was that all of our interviewees had knowledge about the existence of the BoP in Germany but not one firm conceded to addressing this group purposefully. These findings as well as our findings from our literature review (Prahalad, 2005, p.10; Sinha, 2013, p. 71) support the fact that firms assume too little purchasing power from this customer group which explains why they have been neglecting this group of customers, previously.

Economic-Driven Opportunity

Additionally, we wanted to detect if firms can be profitable when addressing this customer segment with FI in Western Countries, e.g. Germany. It was important to
understand if this concept is already established although unknowingly. Most firms stated seeing definitive potential in addressing this customer group albeit some of them said it depends on the industry and products and/or services offered. Surprisingly, even though they themselves confessed their products/services turned out to be frugal (according to our definition), they do not see themselves being profitable when addressing the BoP exclusively. Accordingly, one firm did not see any potential and stated, that this is most often not a strategy entrepreneurs would adopt to generate profits. Thus, we can observe that general economic potential persists but only few want to set this as an objective in their strategy albeit many informants put emphasize on participation in life for the lower income segments.

Summarizing, we observed that the term ‘BoP’ is widely known amongst German firms and entrepreneurs, even though many did not believe of the existence of a BoP in Germany at first. While thinking about a bottom of the pyramid in Germany, the contestants connected this layer with traits classically described in the bottom billion, thus, automatically linking the ‘poorest’ to that section. While most agree on potential for FI in the BoP market, only very few concentrate on this segment deliberately but include it anyway as they target the masses. The outcome of this section is that even though the BoP might not correlate to great economic success, most of the firms are still convinced of its economic potential as a previously insufficiently exhausted market.

6.5. Requirements for Success
To analyze the presence of frugal innovations in Germany, we needed to evaluate the traits such innovations have and change/adapt them to the different market context as a requirement for success. Additionally, we integrated further criteria that our respondents considered to be of importance as well as the four A framework (acceptability, awareness, affordability and availability) from the literature that needs to be considered when achieving success at BoP markets (Khan, 2016, p. 6; Anderson & Billou, 2007, p. 15-16; Esko et al., 2013, p. 231; Pansera, 2013, p. 471).

Adaption of Criteria
At this stage, we wanted to receive insights about how these seven previously defined criteria must be adapted to be able to apply FI in the German context. We received answers from one participant by whose response ‘law’ and ‘price recommendation’ are tightly linked and affect each other. However, as both were not confirmed by the other participants of the study and especially the fact that both are a prerequisite in form of market condition and not in form of product related characteristic, we decided not to include these two further.

Besides this, two participants included the criterion of ‘flexibility’ and ‘branding’ of the product. First one is what we trace back to the issue of upgradeability and the ability for customers to use flexible products according to their current needs and desires. However, as it mentioned in this section, we still consider it separately and will include in the criteria catalogue as another 3rd tier criterion.

The second mentioned additional characteristic, namely branding, incorporates the idea of using certain brand names to increase the number of sales of the product. To our understanding, this refers to the acceptability of a frugal product that has generally better chances in the market when connected to a strong and valued brand. We could
verify this assumption through two of our participants who consider this of importance. We therefore will also include this criterion as 3rd tier criterion.

Apart from the just mentioned additional criteria, some single participants stated suggestions in form of ‘new products’, ‘prioritization’ of the present traits and ‘warranty’. Since those just got mentioned once and rather derived from a little brainstorming session during the interview, we cannot find a link to other existing products that a representative for the German market and thus, will not be considered in our adaption of criteria. However, even though we do not consider these findings further, we would like to emphasize the relevance of these criteria for future research on the subject.

**Digitization**
We already mentioned that we interlinked the singular terms of digitization and connectivity to the property of ‘digitization’ (in 5.3.3.). To our surprise, this issue is of great importance for most of the companies. Five out of eight accordingly mentioned this criterion while three did not mention it. While we can generally just analyze the data that we received during the interviews, we still noticed that C5 and C7, who did not mention the digitization issue, have a mobile app through which the according product and service can be seen and booked. However, as it seems not be prevalent to them, we had to deduce that digitization is not as important as other criteria. The special case however is C7, who did not mention digitization as important criterion, yet suggested to adapt this criterion later. Therefore, five companies incorporate the issue of digitization. This is surprising in so far, that even though FI refer to the most basic product and to affordable services, digitization and internet access is still more important than performance level and no-frills strategy. According to our prioritization ranking, digitization must thus be categorized as 2nd tier criteria. Development of apps and the operation of internet web presence is costly and requires maintenance. From a logical perspective, these points are considered costs and therefore thwarting the issue of affordability. However, it seems that these costs are generally means to increase the scope and to reach customers accordingly. Germany as a developed country has a high level of connectivity and access to internet is almost regarded as a human right. The frugal companies that we interviewed, strongly incorporate this notion leading to the apposition of the criteria.

As a side remark, we wanted to know if there is any additional or synonymous term for frugal innovation after we introduced the study participants to the whole concept and all the traits it entails to avoid repetition. At this stage in the interview, every representative except one were not knowledgeable about this concept being established under a different name. Surprisingly, one representative named the term ‘downgrading’ as a concept that could clash with frugal innovation, meaning that products will get narrowed down as much as they can to be distributed as the cheapest alternative. Some of the products the firm designated as ‘downgrading’ product were known to us and in fact, we agree that the term may fall under the concept of frugal innovation but does not replace or substitute it.

**Ability to Upgrade**
Another criterion we proposed was the ability to upgrade a basic version. This can be typically observed at the classic example of Ryanair, while the basic price is cheaper as competitive products, yet every form of comfort is also rejected, but can additionally be
purchased. This means that, as soon as a consumer has the personal desire for more luxury and can afford the extras, it would be generally available. This could also be seen in the car-sharing companies that we interviewed, partly because of this reason, because higher car classes can be purchased if wanted.

The results show that four companies approved this criterion. For the other four companies, it was not applicable as some just serve as the mediation platform between supplier and consumer of a service, or as retailer offering products. In case of latter one, one can upgrade in that sense, that one purchased brands instead of frugal products such as store brands. However, upgradability like in the case of Ryanair is not possible.

We infer that upgradability is an important tool to let customers customize the offering according to their wishes. As consumers of developed countries seem to be more self-determinant or at least see this issue as more important caused by other threats than those in emerging countries, this criterion gains importance. However, only half of the contestants responded positively to this question, which categorizes it a 3rd tier criterion.

The description for product criteria has been done during this chapter as well as in chapter 6.3. in terms of the original laid down product characteristics. However, we felt that a graphical illustration would help to enhance clarity about this analysis. We therefore created the ‘criteria onion’ that can be found in appendix 14.

4A’s for Success
Looking at table 4, we can observe that affordability is of utterly importance when considering success at the BoP market, supported by our respondents. Thus, affordability as criterion is the most important requirement when distributing products and/or services in this particular market. This is very much in line with what we found out at other stages of the analysis. According to our interview results, we can further see that awareness and acceptability come second in the sense, that the same number of contestants found these aspects important for their own strategy. Lastly, availability is the least important, nevertheless, needs to be implemented since more than half of our interviewees found this aspect important. Therefore, the 4A’s will stay implemented in our framework but will undergo a prioritization as did our product characteristics to best reflect the results of our interviews and findings.

The main contribution of this analyzed section is the prioritization of some criteria and the overall addition of new criteria, that we inductively generated through our interview data. For further examination of the concept of frugal innovation in developed markets, we believe these newly curated criteria are of great importance. The same counts for the revised framework of 4A’s which also point towards affordability and sets the other three components to lower grades.

6.6. Value Creation
The created value from a product and/or service is interesting and important for our study, because frugal innovation often have a social character, which we do not address specifically. In our study, we wanted to analyze the state of frugal innovation in Germany, considering whether firms that drive FI can still be economically profitable. When we talked about the economic-driven opportunities earlier (6.4.), all except one interviewee agreed of there being economic potential for firms in this context but did not necessarily refer to their own case. Interesting though, when asked what value their
product offers, the majority of our interviewees linked their value creation to economic contribution. This is also strongly connected to what we already analyzed earlier (see 6.1.) when we stated that the economic perspective is almost always a prevalent influencing factor. In the beginning we assumed, that the three elements of the pictured value creation are important and equally distributed except of the economic factor being superior to the other two elements. Generally, the results show the same ratio for all value creation factors (social, economic & ecological). This means that in total, all three elements show the same importance when talking about created value from FI in the German market, hence supporting our assumptions from the beginning. Thus, all of the just mentioned parts will be illustrated equally in our framework.

Another question we incorporated in the section of value creation was the extent to how these elements were already integrated during the product development process. Surprisingly, albeit the results show that all tiers of value creation are equally distributed, social motivation in the product and/or service development clearly derive from a social motivation. We now know, that the product goal was primary of social nature, which is indirectly mirrored in answers from other questions, i.e. product criteria, customer segments, etc. What we already came to notice is the notion that the elements of value creation were not always quite the same in the beginning of the product life cycle, as for some the economic value came into place later.
7. Conclusion

The final chapter deals with conclusions from the study based on the primary and qualitative data we collected through interviews. The overall aim is to answer the research questions and reflect to the study purpose. We will also present contributions, both theoretical and practical in nature and discuss them according to the findings we analyzed earlier. This chapter will then close with limitations for the thesis and study at hand as well as it will suggest interesting fields for further research.

In section 1.5, we emphasized the purpose of our thesis. Following an exploratory research approach, we set two aims to further analyze the previously insufficiently addressed concept of FI. During the thesis, we clarified that the general state of knowledge is rather scant, but even less literature can be found when the concept is specifically applied in the context of developed countries. We set ourselves two interlinked goals: (1) to analyze the general state of the concept in Germany as representative of developed countries while we strongly allude to the allegedly economic potential inherent with the goal of serving the bottom of the pyramid; and (2) to either confirm, adapt or add further previously unknown criteria for frugal innovation that are justified by the specific market conditions.

Based on the identified knowledge gaps found through the literature review, two research questions were formed that guided the research:

1. What is the current application status of frugal innovation in Germany?
2. What characteristics should frugal innovations have to serve the BoP in the context of the German market?

To answer both most properly and in the special case of our topic as it is in a general under-researched state, we believed that only a qualitative study would be supportive. We also applied the GT analyzation techniques to extend the existing theory of frugal innovation in the best possible way. The empirical data had been collected from a total of eight interviews with representatives of companies that engage in core activities in Germany. We identified each company purposely according to the threefold definition of frugal innovation (thrifty, modest and affordable). The received valuable responses led to fruitful discussions amongst us as researchers while the data was further processed and analyzed in order to fulfill the study purpose.

7.1. Answer to Research Questions

The revised framework will serve as the core of this section. After analyzing the data accordingly and interconnecting the different sub-concepts to the responses we received, the original framework was obsolete and thus had to be adapted to adequately show our study results. This section will therefore answer the research questions with the help of the edited framework.

Starting with our first research question, one of our core assumptions in terms of frugal innovation after the thoroughly reviewed available literature was, that the concept is rather unknown in developed countries. Due to the novelty of the concept, it was of utmost importance to analyze the actual state of application of FI in Germany. Referring back to the introduction (see 1.3.) and the mentioned continuum ranging from one side on which the concept is not known to the other side on which the concept is actually applied, we are now required to settle the current state of application of Fi in Germany
alongside this continuum. Therefore, we state that the concept is targeted more towards the latter mentioned side, while we cannot assume that it has fully reached this end of the continuum due to its approved level of unfamiliarity in the German market. The fact that our participants had never heard the term before we introduced it to them, approved the low state of prominence of the concept. After personal preparation by the study participant however, we received responses including concepts and approaches that were similar to what can be found in the available literature (Rao, 2013, p. 66; Bharti et al., 2014, p. 172; Basu et al., 2013, p. 64; Simula et al., 2015, p. 1568; Hossain et al., 2016, p. 132; Center for Frugal Innovation, n.d.). The analysis thus indicates great support for the definition of the concept that we incorporated as working definition (Soni & Krishnan, 2013, p. 31; Roiland, 2016, p. 575; Tiwari et al., 2016b, p. 2). Furthermore, all firms fulfill at least some of the criteria and hence support the application of the concept of frugal innovation in Germany and potentially in developed countries in general, when considered that most firms are active in other countries as well.

The approval of low familiarity with the concept, and the match of companies with theoretical aspects is important in so far, as it explicitly answers the first research question, i.e. the state of application of FI in Germany. Even though, none of the interviewees was knowledgeable about the topic before, they could still cope with the new term and refer it to their own business activities. Beyond that, further examples could partly be contributed, the incorporated sub-concepts (thriftiness, modesty, affordability, BoP and value creation) could be approved and advanced, and the positive response towards certain criteria leads to a positive confirmation of the state of frugal innovation. This is accompanied by the positive self-reflection of the majority of the interviewees whether they perceive their own product as frugal.

Deriving and concluding from these analyzed findings, we state that the concept of frugal innovation is generally applied in developed parts of the world, but most likely not known under the original connotation. Even though the first research question had to be answered positively in the sense that we found proof of its occurrence, we still confess that the criteria are different to the original conception of this innovation type. This leads us to our second research question, i.e. the investigation of the criteria of the products to be applicable in the developed world. For the reader to follow our line of argumentation, we will first illustrate the revised framework. The description of the framework and therefore the answers of the research questions as well as our research purpose will be performed in a chronological structure.

In the figure below, one can see clear differences in comparison to the original framework (see figure 2 and 10). At this point, we should mention, that the framework only shows us how we perceive frugal innovation in Germany based on the eight conducted interviews. Although the study results were unambiguous and led to the illustrated framework in our case, we admit that incorporating a larger set of companies or different firms could lead to different results and in turn, a varied framework. Following a top-down-approach, we will first refer to the entrepreneurial motivation. Afterwards, the next lower level will be defined in terms of market perspective and product perspective that together result in a product-market fix. The illustrated arrows refer to the interconnection of the concepts as they either create a certain fit if they combine concepts, or lead to a certain outcome, i.e. potential success at the BoP. For
frugal innovations to be successful, the aspects of value creation and the revised 4A-requirements are important.

One major adjustment was made in that sense, that we neglected to depict the framework in a form of process what we previously did. The contrary is the case. We still believe and validate the earlier assumptions that the concept of frugal innovation is of novel and fragmented nature based on the relevant literature streams. We therefore decided to use a framework that shows distinctive parts that must be interconnected to create an overview and to introduce the concept that we felt should be the beginning of further research in this field.

In the very first sections of the literature review we referred to entrepreneurial motivation to engage in innovative activities (Patzelt & Shepherd, 2011, p. 640). Throughout the analyzation of the empirical data, we came to notice that we had to include both sustainability-driven and opportunity-driven entrepreneurial motivation (Carland et al., 1984, p. 358; Parrish, 2010, p. 510-511). While we generally had in mind to investigate FI through the lens of opportunity-driven motivation, we had to include sustainable and social issues likewise (Pervez et al., 2013, p. 56).

The next major finding was that the bottom of the pyramid is not the main target group for FI in Germany. While income situations of BoP customers from emerging vs developed countries are fundamentally different (UNDP, 2015, p. 208-211), we had to observe that there is still a BoP in Germany (Simula et al., 2015, p. 1; Kahle et al., 2013, p. 223; Bhatti & Ventresca, 2013; Piacentini & Hamilton, 2013). However, what we found out during analysis is that the interviewed firms generally do not explicitly address the BoP (Prahalad, 2005, p. 10; Sinha, 2013, p. 71), but rather address the masses including the BoP. Referring to the market potential within this customer segment that is most likely not fully exhausted according to our interview partners, we acknowledge and approve the unspecified targeting of these customers. This could in turn stand for unsaturated market potential. However, the enlargement of the customer...
segment towards the masses, refers to what we criticized at the Ernst & Young report (2011) at earlier stages. Furthermore, Karnani (2009, p. 7) and Anderson & Billou (2007, p. 14) criticized the BoP literature to confuse the correct targeted market as it addresses the middle class instead of the poor bottom. We therefore feel vindicated in depicting the market perspective referring to the masses.

Another major conclusion can be seen in the revised criteria catalogue that we illustrated in a figure (see 6.3/6.5 for description and appendix 14 for illustration) due to the prioritization and the addition of further criteria. To answer the second question properly we must keep in mind that the BoP market in Germany is most likely not saturated. However, the prioritization process that we applied adequately refers to the level of importance for each criterion. While we generally approved all seven criteria from which affordability is of utmost importance, further criteria had to be added to make FI applicable. As it can be seen in the ‘criteria onion’, we placed affordability in the center of the figure to show that the other six original criteria are considered means to achieve lower retail prices. On the other side, we included one 2nd tier criterion (‘digitization’) and three 3rd tier criteria. We believe that this revised criteria catalogue serves a good basis to determine and characterize frugal innovations in the German market. The combination of an entrepreneurial spirit, the market perspective including BoP and mass market under consideration of the newly edited criteria, are the set of concepts that together guarantee the product-market fix.

As we have chosen to apply exploratory approaches, we stress the importance to analyze the value creation that is inherent with innovations in general (Tidd & Bessant, 2014, p. 9; Mirvis et al., 2016, p. 5014; Crumpton, 2012, p. 98; Thompson, 1965, p. 2), but specifically for us in terms of FI. We therefore applied the pillars laid down by Elkington (1999, p. 397) and analyzed the empirically collected data accordingly. While the economic pillar was by purpose on top of the other two in the original framework, we had to revise this assumption, as we received equal amounts of answers for each pillar. Hence, we illustrate the threefold approach of value creation as simultaneous approach for all pillars. We also incorporate the properties of ‘scalability’ and ‘invisible/ordinary’. Even though that only one contestant mentioned these, we still believe that this adds new knowledge to the concept and has not been mentioned in the available literature before, at least to the best of our knowledge. The original framework also depicted a square around the concept of frugal innovation and market conditions regarding whether this concept has economic-driven potential for firms or not. At this point, we decided not to include the square any more, however see the concept as a whole and valuable in terms of financial potential. We could prove this assumption through received responses referring to either context-dependency or general potential.

As a last change, we also had to prioritize the four requirements that are necessary for success at BoP markets (Khan, 2016, p. 6; Anderson & Billou, 2007, p. 15-16; Esko et al., 2013, p. 231; Pansera, 2013, p. 471). It becomes obvious at this point again, that affordability issues are of major importance while the other three are less important, which is based on the specific market conditions in Germany.

Based on the collected qualitative data, and through thorough analysis of the data, we could adequately revise our original framework. We believe that this edited framework does not only serve as answers to the stated research questions, but also addresses the study purpose and reflects it accordingly. The application of the analyzeation techniques
of GT enabled us to find patterns amongst the answers and to draw connections between sub-concepts. Our revision of the framework therefore serves as the main result of the comparison between theory and practice and stands as the extension of the theory about the concept of frugal innovation (Creswell, 2014, p. 14; Goulding, 2002, p. 43).

What we have outlined so far, are in fact the answers to both research questions. To sum it up, we identified the concept of frugal innovation as generally applied in the context of Germany, despite its unknown connotation and the necessity to adapt characteristics. Latter one serves as answer to the second question as it shows not only the relevant criteria but also provides a gradation of each criteria to reflect customer desires in a best possible way. The revised framework supports the answers to the research questions graphically. Whereas the first question is answered positively by the general application of the concept in the German market (product-market-fix), the second question is specifically addressed and answered by the research onion (see appendix 14). We critically confess though, that following and carrying out the concepts and connecting procedures as illustrated in the revised framework will not ultimately lead to economic success for the firm. Yet, we believe that considering our research findings and the revised framework when being active in this field, could increase the probability of market success for the firm. Lastly, we want to mention again, that all of our findings, contributions and in turn, our perspective of FI in Germany, are based on the eight conducted interviews. In this respect, further research or additional data collection can change the provided picture of frugal innovation or take a different perspective on frugal innovation different from the one provided by us.

7.2. Theoretical and Practical Contributions

In this section, we will present our theoretical and practical contributions to the literature regarding our study results as well as findings in general while working with the different concepts.

In accordance to our thesis in general and especially to our conclusion (7.1.), our main contributions add to the literature in that sense, that we recognize and confirm the existence of a concept that has been neglected to be integrated into the industrialized countries’ context for long. To the best of our knowledge, the concept of frugal innovation has not been considered relevant in Western countries, however we proved it to be of importance, at least in Western Europe, i.e. Germany. As researchers can observe, there are firms that offer FI in developed countries and not only in Germany, since some of the organizations we interviewed are active across several countries and continents, offering the same product and/or service as in the context we studied.

Another contribution is the adaption of criteria of frugal innovation. As we stated many times, the concept of frugal innovation is rather novel in general, especially when applied in the context of developed countries. Earlier, we compared emerging countries and developed countries (see 2.1.1.) to be able to grasp the different market needs both types (emerging markets vs developed markets) provide, since product characteristics change according to needs. We found out, that additional aspects as digitization (access to the internet), flexibility, branding and upgradeability are of relevance as well as a requirement if products shall be successful in developed markets. Deriving from that, the newly stated traits of frugal innovations are new contributions concerning the concept when extending it to developed markets.
Concerning the concept of bottom of the pyramid, several authors consider the idea of top-of-the-pyramid countries having their own bottom of the pyramid population (Angot & Plé, 2015, p. 3; Hossain et al., 2016, p. 137; Piacentini & Hamilton, 2016, p. 137). According to our literature review, we did not find a defined BoP for Germany, which is the reason why we defined it properly to suit our research aim, i.e. FI in Germany. This resulted in general requirements (threshold for poverty, unemployment and low-income), that need to be considered when defining such a BoP for Western countries and can be adopted for nearly every country context if chosen. While the definition of the BoP itself is not the main contribution, it is the knowledge that developed countries in fact, do have a BoP and leads to erase the previous assumptions that this is only a phenomenon in developing countries. Thus, this contribution may be of assistance for other researchers that want to further enhance the concept of frugal innovation in developed countries as well as use our definition as a starting point when aiming to study a potential BoP topic for modern societies. Our definition of a BoP in Germany also offers a valid societal contribution in the sense that we defined a certain target group that has not been adequately served compared to more solvent customers. Increased focus of companies on this customers group would not only serve economic approaches of the firm, but also help low income customers to gain access to products that were previously unaffordable.

When we started our thesis, we found ourselves in the midst of an endless jungle of definitions regarding the different concepts we applied (innovation, frugal innovation, bottom of the pyramid, etc.). Based on that, we felt the need to define the concept of frugal innovation as a working definition to continue our research. However, we need to mention that this contribution is based on a critical evaluation of the existing literature regarding the concept and not an outcome of the interviews from us conducted. Thus, it was hard to find a general scheme and to keep track of the variety of concepts that are interchangeably connected to frugal innovation. Hence, we share a clear outline of all the concepts integrated and their differences to shed light into the literature for researchers that want to study one or multiple of those concepts.

In practical aspects, we laid down the foundation for future researchers and provided a clear structure of the single concepts as well as a comprehensive framework regarding frugal innovation in Western countries, e.g. Germany. We also proved the concept of frugal innovation to have inherent economic potential which could serve as inspiration for companies to specifically focus on this innovation type.

**7.3. Societal and Sustainable Implications**

To show a higher level of abstraction and to pick up the social and sustainable considerations mentioned throughout the thesis, we believe this section will serve as a concluding presentation of these considerations.

In our thesis, we have clearly outlined that we perceive frugal innovation as innovation type, which is not only a suitable approach to satisfy certain stakeholder groups through financial results, but will also most likely impact positively on the society at large. Enabling several customer groups access to products and services that they might otherwise not be able to consume, adds on to an approach facilitating equal chances to participation in a social and modern society.
From a sustainability perspective, that we explicitly stressed to address through value creation as outcome of frugal innovation, FI fosters ecological, economic and social improvements. Frugal innovation implicitly applies less amounts of resources and therefore facilitates a decreased level of an environmental footprint. The social pillar of our value creation refers to both consumers and companies who could theoretically benefit from frugal innovations in economic ways through lower retail prices and cheaper materials. The social pillar was addressed and becomes obvious through the idea of social inclusion of larger parts of the society.

7.4. Limitations and Suggestions for Future Research

Lastly, we want to present the limitations of our research as well as suggestions to continue our study as well as topics that we found interesting in connection with our topic.

We need to present and acknowledge several limitations of our research. First, our thesis and its results were restricted due to the nature of a master’s thesis, meaning that time and resource constraints directly influenced our work. This not only led to a limited number of interviewees (eight firms) we could convince to take part as subjects but also confined qualitative measures and its long-term consequences.

Second, our interviewees and the firms they represent derive from different industries, not having many similarities in the products and/or services they offer. We justify this choice by referring to the novelty of the concept, especially when applied in the industrialized context and to extend the existing theory in the best possible way. However, we admit that a more specific context like firms from the same industry or firms that offer the same products could offer a more context bound and deeper contribution. Nevertheless, we suggest that other researchers consider this point when building on our study.

Third, as we previously said, we wanted to get a broad insight about our thesis topic and thus, we deliberately chose the context of Germany. Our research is limited by the fact that we only analyzed the state of the concept in one country. In the beginning, we wanted to include several Western European countries but due to the complexity of the topic, we had to restrict our research and only concentrate on Germany.

Proceeding, we want to give suggestions regarding future research concerning our topic. We regret that we were not able to include the following elements into our research but hope that there will be researchers that pick up where we left off. At this point we will explicitly refer to potential future research that we acknowledge to be the most relevant. Moreover, throughout our analysis section, we occasionally mentioned further points for future research, that might be of importance and are thus worth being studied.

In general, we think that there should be more directed research about frugal innovation in general, but especially in the context of developed countries. As seen in our literature review, many researchers suggest the importance of the concept in industrialized countries but do not provide explicit research in that regard. We also think that the time factor of conducted research as well as the scope (number of firms, countries and products) should be extended to be able to provide detailed contributions to the literature and thus, to our economies.
Especially the consideration of value creation of such innovations to our society should be further studied. We talked about these elements briefly, because we found it important to integrate but were not able to give this deeper consideration because of the limited extent of our study. During our research, we stumbled upon several interesting factors that could be considered when doing frugal innovation research. For instance, several authors (Simula et al., 2015, p. 5; Angot & Plé, 2015, p. 6; Pitta et al., 2008, p. 400), mentioned the necessary change and adaption of current business models to better fit the needs of FI in developed markets under consideration of resource realignment. Further studies could also investigate the differences between emerging and developed countries when applying frugal innovations.

As a final conclusion for our thesis, we acknowledge the novelty of the concept of frugal innovation, yet we are convinced of its application and further importance for modern societies in general as it incorporates value for the people of the country in economical, ecological and social manners.
8. Reference List


Collier, P. (2007). *The bottom billion: Why the poorest countries are failing and what can be done about it*. Oxford University Press, USA.


Appendices

Appendix 1: Top10 Countries of the United Nations HDI Ranking

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>HDI Value</th>
<th>Life expectancy at birth</th>
<th>Expected years of schooling</th>
<th>Mean years of schooling</th>
<th>GNI per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Norway</td>
<td>0.944</td>
<td>81.6</td>
<td>17.5</td>
<td>12.6</td>
<td>64.992</td>
</tr>
<tr>
<td>2</td>
<td>Australia</td>
<td>0.935</td>
<td>82.4</td>
<td>20.2</td>
<td>13.0</td>
<td>42.261</td>
</tr>
<tr>
<td>3</td>
<td>Switzerland</td>
<td>0.930</td>
<td>83.0</td>
<td>15.8</td>
<td>12.8</td>
<td>56.431</td>
</tr>
<tr>
<td>4</td>
<td>Denmark</td>
<td>0.923</td>
<td>80.2</td>
<td>18.7</td>
<td>12.7</td>
<td>44.025</td>
</tr>
<tr>
<td>5</td>
<td>Netherlands</td>
<td>0.922</td>
<td>81.6</td>
<td>17.9</td>
<td>11.9</td>
<td>45.435</td>
</tr>
<tr>
<td>6</td>
<td>Germany</td>
<td>0.916</td>
<td>80.9</td>
<td>16.5</td>
<td>13.1</td>
<td>43.919</td>
</tr>
<tr>
<td>6</td>
<td>Ireland</td>
<td>0.916</td>
<td>80.9</td>
<td>18.6</td>
<td>12.2</td>
<td>39.568</td>
</tr>
<tr>
<td>8</td>
<td>USA</td>
<td>0.915</td>
<td>79.1</td>
<td>16.5</td>
<td>12.9</td>
<td>52.947</td>
</tr>
<tr>
<td>9</td>
<td>Canada</td>
<td>0.913</td>
<td>82.0</td>
<td>15.9</td>
<td>13.0</td>
<td>42.155</td>
</tr>
<tr>
<td>9</td>
<td>New Zealand</td>
<td>0.913</td>
<td>81.8</td>
<td>19.2</td>
<td>12.5</td>
<td>32.689</td>
</tr>
</tbody>
</table>

Appendix 2: Bottom 5 Countries of the United Nations HDI Ranking

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>HDI Value</th>
<th>Life expectancy at birth</th>
<th>Expected years of schooling</th>
<th>Mean years of schooling</th>
<th>GNI per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>184</td>
<td>Burundi</td>
<td>0.400</td>
<td>56.7</td>
<td>10.1</td>
<td>2.7</td>
<td>758</td>
</tr>
<tr>
<td>185</td>
<td>Chad</td>
<td>0.392</td>
<td>51.6</td>
<td>7.4</td>
<td>1.9</td>
<td>2.085</td>
</tr>
<tr>
<td>186</td>
<td>Eritrea</td>
<td>0.391</td>
<td>63.7</td>
<td>4.1</td>
<td>3.9</td>
<td>1.130</td>
</tr>
<tr>
<td>187</td>
<td>Central African Rep.</td>
<td>0.350</td>
<td>50.7</td>
<td>7.2</td>
<td>4.2</td>
<td>582</td>
</tr>
<tr>
<td>188</td>
<td>Niger</td>
<td>0.348</td>
<td>61.4</td>
<td>5.4</td>
<td>1.5</td>
<td>908</td>
</tr>
</tbody>
</table>

2 “PPP” refers to purchasing power parity, which, in its simplest form, is defined as “level of the nominal exchange rate such that the purchasing power of a unit of currency is exactly the same in the foreign economy as in the domestic economy, once it is converted into foreign currency at that rate (Taylor, 2003, p. 437)”.
### Appendix 3: Market Comparison Between Developed and Developing Markets

<table>
<thead>
<tr>
<th>Developed Countries</th>
<th>Criteria and Source</th>
<th>Developing Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on industrial sector</td>
<td>Industrial Economics (A) (UNIDO, 2015, p. 46; Knivillä, 2007, p. 299)</td>
<td>Economy depends on agriculture sector with slow/medium shift towards industrialization</td>
</tr>
<tr>
<td>Well-off and rich</td>
<td>Citizens (B) (Davies et al., 2007, p. 3; Gye, 2013)</td>
<td>Rather poor and clearly below poverty line</td>
</tr>
<tr>
<td>Roads in good conditions, railways and airports</td>
<td>Roads and Infrastructure (C) (World Bank: Logistics Performance Index)</td>
<td>Barely developed infrastructure</td>
</tr>
<tr>
<td>Stable government with effective and reliable political decisions; level of corruption is very low</td>
<td>Government (D) (Transparency International)</td>
<td>Unstable governments with high rates of corruption</td>
</tr>
<tr>
<td>Good health institutions provided to citizens; Good expectations die to better health care with relatively low birth rates</td>
<td>Health Care and Life Expectancy (E) (Herzer &amp; Nunnenkamp, 2015, p. 2; UNDP, 2015, p. 208-211; Unicef, 2015, p. 5)</td>
<td>Health care is not equally skilled and accepted; Much lower life expectancy and high birth rates</td>
</tr>
<tr>
<td>Education, health and living standard on a combined high level (0.800-1.000)</td>
<td>HDI (F) (Income / Education / Life expectancy (UNDP, 2015, p. 208-211)</td>
<td>Three dimensions of education, health and living standards are very low (&lt;0.550)</td>
</tr>
<tr>
<td>Safe and clean water with manifold food options</td>
<td>Water and Food Supply (G) (Canadian Geographic)</td>
<td>Less clean water with less reliable food opportunities</td>
</tr>
</tbody>
</table>

### Appendix 4: Hofstede Dimensions and Country Comparison Western Europe

<table>
<thead>
<tr>
<th>Country</th>
<th>Long-Term Orientation</th>
<th>Power Distance</th>
<th>Individualism</th>
<th>Uncertainty Avoidance</th>
<th>Masculinity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Belgium</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>France</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Germany</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Ireland</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>
Appendix 5: Follow-Up Mail for Participants

Dear Mr./Mrs.-------,

Thank you very much for agreeing to participate in our research project. As we have noted earlier, the interviews we will conduct are part of our Master’s Thesis that we are currently writing at Umeå School of Business and Economics in Sweden. Your first-hand insights are relevant as they help us to elucidate if and how frugal innovations are a potential means for German companies to create value in terms of profit, social inclusion and decrease of environmental footprint. The phenomenon of frugal innovations is relatively novel and has previously not been investigated in terms of developed markets, where contextual factors are rather comfortable for citizens. However, also many people must manage to live close or below the poverty line and thus have only limited resources, which could make frugal innovations a valuable instrument to address untapped customers.

Your participation is fully voluntary. You always have the choice to skip questions or to completely withdraw from the project at any time. Also, if you wish to be treated anonymously after the interview has been conducted, we will ensure to implement your concern in our research. For the conduction of the interview and to be able to transcribe your given statements on the questions into a written format, we plan to use a tape recording device and we hope, that you’re fine with this approach. The recorded interviews will be stored safely solely on our personal computers. The recordings will only be used to write the thesis and the transcripts won’t be shown to anyone else except for the thesis grading committee and our supervisor, Mrs. Zsuzsanna Vincze. If you wish, we would be happy to send the transcribed interview back to you as a follow-up.

Attached to this message, you can find our general interview questions. In accordance to the interview and your given responses, we might ask some additional questions to delve deeper into the topic.

At any time, feel free to contact us if further questions more you come up or if interview questions might not be clear to you.

The contact on skype through which we would like to make the interview is (Name). We are looking forward to speaking with you.

Kind regards,
Jöran Mahr and Melissa Imhof

Jöran Mahr  
Business Development and Internationalization  
Umeå University, Sweden  
+49 17632740209  
joeran.mahr@gmx.de

Melissa Imhof  
Business Development and Internationalization  
Umeå University, Sweden  
+49 15144340318  
melissaimhof@web.de
Appendix 6: Confirmation Letter

INTERVIEW REQUEST FOR MASTERS THESIS

Dear Sir or Madam,

My name is Zsuzsanna Vincze and I am an Associate Professor at the Umeå School of Business at Umeå University (Umeå, Sweden). I am currently the supervisor of master’s thesis projects.

I would like to confirm that Melissa Imhof and Jöran Mahr are enrollees at Umeå University (Umeå, Sweden) and undertake their Master studies in the program Business Development and Internationalization. To fulfill the program requirements, they must write a Master thesis jointly.

Therefore, the students are currently in the process of composing their thesis on the topic “Paradigm Shift – Applying Frugal Innovation in Developed Countries to serve the Bottom of the Pyramid”. As part of their research, they are required to do field work (e.g., interviews) in various organizations. The field work together with the theoretical part, is part of the requirements at our School. We therefore encourage students to collaborate with organizations such as yours in order to obtain relevant knowledge in the field of their research through practical research.

Jöran and Melissa are committed to use and save all data cautiously, ensuring the anonymity of the respondents and interviewees. The ethical issues related to this research are the same as in any business research. The respondents and interviewees will be informed of the purpose of the research and their anonymity will be protected.

I hereby request you to accord them the opportunity to carry out this research in your organization by offering them the necessary support to enable them to complete their thesis successfully.

In case of any further queries or clarifications on this matter, please do not hesitate to contact me.

Sincerely,

Zsuzsanna Vincze, PhD
Associate Professor
Head of Entrepreneurship section
Appendix 7: Interview-Guide for Companies

<table>
<thead>
<tr>
<th>I. Introduction of the Research Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Thank you for participating in this study on &quot;frugal innovations&quot; in Germany.</td>
</tr>
<tr>
<td>2. Introducing us as researchers.</td>
</tr>
<tr>
<td>3. Brief presentation of the study.</td>
</tr>
<tr>
<td>4. Ethical aspects (e.g. voicerecording) and clarification of anonymisation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. Background Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Could you briefly explain your personal background? (Age, level of education, previous professional experience)</td>
</tr>
<tr>
<td>6. Would you please briefly describe in which area (industry) your company is active? What are the main products and services that are offered?</td>
</tr>
<tr>
<td>7. Could you briefly outline the influencing factors (target group, motivation, etc.) that played an important role in the development of the product.</td>
</tr>
<tr>
<td>8. Do you address primarily a specific customer group with your products and why?</td>
</tr>
<tr>
<td>9. In which markets (except Germany) are you mainly active? How do the income conditions of the customers as a whole look like?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III. Frugal Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. How would you define 'frugal innovation'?</td>
</tr>
<tr>
<td>Follow-Up (10): What do you see as the motivation to develop and offer products aimed at customers of lower income classes?</td>
</tr>
<tr>
<td>11. To what extent do you see the applicability of frugal innovations in the German market?</td>
</tr>
<tr>
<td>Follow-Up (11): Do you know examples of frugal innovations in Germany? (Think of other companies / industries as your own business, as we have directly</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV. Product Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Which of the seven product criteria, that we defined, are also included in your product? (Core functionality, performance level, usage-centered, ruggedization, cost reduction, No-Brills and environmental issues).</td>
</tr>
<tr>
<td>13. Do you see other criteria incorporated in your product(s), which are justified by the specific market conditions in Germany?</td>
</tr>
<tr>
<td>14. Do competitors' products (if existing) have the same criteria as your products? If not, how do the products differ?</td>
</tr>
<tr>
<td>Follow-Up (14): Do you regard the possibility to offer alternatives to the upgrade of the product / service as a relevant criterion in the development of frugal innovations? (Verifiable only for companies that have anchored this in their business model.)</td>
</tr>
<tr>
<td>15. Now that you have heard the definition and characteristics of frugal innovations, would you classify or identify your product as &quot;frugal&quot;?</td>
</tr>
</tbody>
</table>
### V. Bottom of the Pyramid (BoP) in Germany

<table>
<thead>
<tr>
<th>Question</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. What does the term &quot;Bottom of the Pyramid&quot; (BoP) mean to you?</td>
<td>Analysis whether the term &quot;BoP&quot; is known.</td>
</tr>
<tr>
<td>17. How would you define the BoP for Germany with regard to what factors?</td>
<td>Review of the theoretical significance of BoP in the context of Germany as an industrialized market.</td>
</tr>
<tr>
<td>18. Is this customer group already known to you (BoP as defined above)? If so, what is the name of this customer group that you usually use?</td>
<td>Determining whether the BoP is regarded as a valuable customer group. In addition, possible synonymous names are disclosed.</td>
</tr>
<tr>
<td>19. Are you already addressing the aforementioned customer group?</td>
<td>Investigation of whether BoP customers are explicitly addressed and, consequently, part of the company strategy.</td>
</tr>
<tr>
<td><strong>Follow-Up (19): Imagine, they no longer offer your store brands, would the BoP customer group be eliminated? (Verifiable only for companies that offer their own brands.)</strong></td>
<td>Determining whether the addressed customers and frugal products are seen as a critical success factor.</td>
</tr>
<tr>
<td><strong>Follow-up (19): If you address several customer groups with different products/services, how do the products differ from each other?</strong></td>
<td>To determine whether there are any differences between the products, with regard to the respective customer group.</td>
</tr>
</tbody>
</table>

### VI. Requirements for Success at BoP Markets

<table>
<thead>
<tr>
<th>Question</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>20. How would you adjust, expand or delete the identified seven product characteristics in the context of Germany?</td>
<td>Survey of whether the criteria catalog of frugal innovations must be adapted in the context of industrialized states.</td>
</tr>
<tr>
<td>21. Is there one (or possibly even more) different term(s) for a concept that incorporates the criteria laid down by us?</td>
<td>Investigation of whether the term &quot;frugal innovation&quot; is already used synonymously, or the conceptual meaning is unclear.</td>
</tr>
<tr>
<td>22. To what extent do you consider the following prerequisites to be relevant with regard to the success potential of the products in the BoP market?: Affordability, Awareness, Acceptability, Availability (4A's)</td>
<td>Survey on the relevance of the requirements described in the literature for success of products in the context of BoP markets.</td>
</tr>
</tbody>
</table>

### VII. Conclusion

<table>
<thead>
<tr>
<th>Question</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. What is the positive contribution of your product? Social, economic and / or ecological?</td>
<td>Determining whether the value created by the product is of social, ecological or economic nature.</td>
</tr>
<tr>
<td><strong>Follow-up (23): To what extent were the above-mentioned areas already part of the motivation for product development and idea generation stages?</strong></td>
<td>Investigation of the elements of value creation and their respective importance as influencing factors in product development.</td>
</tr>
</tbody>
</table>

### VIII. General Follow-Up-Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can you please describe what you mean by that?</td>
<td>This set of questions is used if needed to meet our aim to deepen answers and to gain a detailed understanding.</td>
</tr>
<tr>
<td>Can you describe this point in more detail?</td>
<td></td>
</tr>
<tr>
<td>What were the reasons for this?</td>
<td></td>
</tr>
<tr>
<td>Can you develop the idea further?</td>
<td></td>
</tr>
<tr>
<td>Can you give us an example?</td>
<td></td>
</tr>
</tbody>
</table>

### IX. Completion

<table>
<thead>
<tr>
<th>Question</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>24. Thank you for taking the time to help us investigate the concept of &quot;frugal innovation&quot; in Germany.</td>
<td>We, as researchers, thank you for participating in the survey.</td>
</tr>
<tr>
<td>25. Finally, do you have any questions?</td>
<td>The interviewee is given the opportunity to ask us, as executive researchers, questions.</td>
</tr>
</tbody>
</table>
## Appendix 8: List of Participants and Interview Data

<table>
<thead>
<tr>
<th>Company Name, founded in</th>
<th>Industry</th>
<th>Interviewee (Position)</th>
<th>Interview Duration</th>
<th>Interview Date</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anonymous, 2011 Mobility Service</td>
<td></td>
<td>Participant wishes to stay anonymous. (Executive Assistant to the CEO)</td>
<td>43:15</td>
<td>01.03.2017; 17:30</td>
<td>Telephone call</td>
</tr>
<tr>
<td>Magine TV, 2013 Entertainment</td>
<td></td>
<td>Mr. Schierloh (Head of Marketing Germany)</td>
<td>45:33</td>
<td>02.03.2017; 10:00</td>
<td>Telephone call</td>
</tr>
<tr>
<td>Anonymous, 2015 Food &amp; Gastronomy</td>
<td></td>
<td>Participant wishes to stay anonymous (Key Account Manager)</td>
<td>32:16</td>
<td>03.03.2017; 10:00</td>
<td>Telephone call</td>
</tr>
<tr>
<td>Anonymous, 1948 Retail</td>
<td></td>
<td>Participant wishes to stay anonymous (Area manager - Sales)</td>
<td>41:36</td>
<td>06.03.2017; 14:30</td>
<td>Telephone call</td>
</tr>
<tr>
<td>Anonymous, 1973 Retail</td>
<td></td>
<td>Prof. Dr. Kortum</td>
<td>61:28</td>
<td>09.03.2017; 14:00</td>
<td>Telephone call</td>
</tr>
<tr>
<td>Stadtmobil Berlin, 2007 Mobility Service</td>
<td></td>
<td>Mr. Brauer (Chief Executive Officer)</td>
<td>37:22</td>
<td>10.03.2017; 14:00</td>
<td>Telephone call</td>
</tr>
<tr>
<td>BlaBlaCar, 2006 Mobility Service</td>
<td></td>
<td>Mr. Schiller (Business Developer, Member of executive board)</td>
<td>54:17</td>
<td>14.03.2017; 10:00</td>
<td>Telephone call</td>
</tr>
<tr>
<td>Cambio, 2000 Mobility Service</td>
<td></td>
<td>Mr. Oppitz (Head of Press and Communications)</td>
<td>30:40</td>
<td>15.03.2017; 12:00</td>
<td>Telephone call</td>
</tr>
</tbody>
</table>
In total 323 interview extracts were taken from the transcribed interview material and every extract was aligned to our coding system. From these, we created 126 preliminary categories amongst the eight conducted interviews. We then deduced 41 categories connected to six final categories which are aligned to interview guide. The final six categories are as depicted in level IV and are the ultimate basis for us to build the substantive theory. The figure has been adapted from Vincze (2004, p. 115).
Appendix 10: Sample of Code Used in the Interview Extract

C1/013/13

Company [1-8]

Data Extract [1-41]

Date of Interview [1.03. - 15.3.]
Througout the tables one notices gray fields. In these cases, the interviewee skipped this part of the
question, which, however, also has meaning to our study, which is why we keep them and even coded
them.

<table>
<thead>
<tr>
<th>Industry?</th>
<th>Mobility service and E-commerce</th>
<th>Entertainment sector 2</th>
<th>Food and gastronomy</th>
<th>Retailing</th>
<th>Retailing</th>
<th>Mobility service</th>
<th>Mobility service</th>
<th>Shared economy</th>
<th>Mobility service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product/Service?</td>
<td>Line operation and charter business</td>
<td>Online TV Service (linear TV)</td>
<td>Platform/App as Service</td>
<td>Mini-Washingmachine</td>
<td>Food and Non-Food</td>
<td>Car sharing and side products like insurance package</td>
<td>Platform to provide available seats in a car</td>
<td>Station-based car sharing</td>
<td></td>
</tr>
<tr>
<td>Influencing Factors?</td>
<td>Liberalization of market, change of laws, lack of mobility services beside mass/planes</td>
<td>Changing old economy (traditional telecommunication companies and their offerings) to have a more flexible product.</td>
<td>Social problem and addressing ecological factors.</td>
<td>Considering people with limited financial budget, social motivation and economic aspect.</td>
<td>Customers are almost always left out from the decisions.</td>
<td>Social-demographic factors.</td>
<td>Target group is very large, young to medium old audience (20-45 y/o) as driver and younger target group as riders (18-35 y/o).</td>
<td>Environmental movement, citizen initiatives for more space and less parked cars. Formerly environmental conscious people.</td>
<td></td>
</tr>
<tr>
<td>Addressed customer segment?</td>
<td>Large masses</td>
<td>Main customers (25-45 y/o) and low-income segment.</td>
<td>Large masses. Not aligned to specific group.</td>
<td>People of lower income classes.</td>
<td>Price-conscious customers who shop for price-motives. These kind of customers have been around forever.</td>
<td>Business customers, seniors, students, young families.</td>
<td>People owning car. No particular group in mind in terms of riders. Interesting for low/medium income people.</td>
<td>As many as possible. Generally people within 18-80 y/o.</td>
<td></td>
</tr>
<tr>
<td>Addressed markets beside Germany?</td>
<td>20 countries within Europe</td>
<td>Germany and Sweden (More focus on families and children in S.).</td>
<td>Industrialized countries where food disposal is high.</td>
<td>None besides Germany</td>
<td>Many countries across Europe with different income standards.</td>
<td>Only in Berlin (G.)</td>
<td>Active in 20 countries, worldwide. Income is not only factor for country-targeting but also culture.</td>
<td>Belgium. Making sure that customers are solvent but regard both markets as financially stable. High educational standards.</td>
<td></td>
</tr>
<tr>
<td>III. Frugal Innovation</td>
<td>Term “Frugal Innovation” is known?</td>
<td>Did not know before but prepared for the interview.</td>
<td>Did not know before but prepared for the interview.</td>
<td>Did not know before but prepared for the interview.</td>
<td>Did not know before but prepared for the interview.</td>
<td>Did not know before but prepared for the interview.</td>
<td>Did not know before but prepared for the interview.</td>
<td>Did not know before but prepared for the interview.</td>
<td>Did not know before but prepared for the interview.</td>
</tr>
<tr>
<td>-----------------------</td>
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<td>---------------------------------------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>How to define “frugal innovation”?</td>
<td>Focused on target groups containing people with lower income and at the same time is about the effort to create value for this target group with only little effort or reduced offering.</td>
<td>Like an “invisible innovation” because it does not seem disruptive. Over time it becomes available through price and thus becomes a normal product.</td>
<td>Cut down unnecessary properties of products to ultimately focus on the meaning of the product and make it more efficient or to allow it to be affordable by even more customers.</td>
<td>Is about developing and offering products with which one omits certain functions so that one concentrates on the core functions.</td>
<td>Innovative solutions with new technical functionalities or additional services offered for less. Reduction of complexity. Slim, cheap solutions. Focusing solely on necessary functions.</td>
<td>Innovation aimed at population that has less money and less economic performance.</td>
<td>Making more possible for less.</td>
<td>Make it as simple as possible and for as many people as possible.</td>
<td></td>
</tr>
<tr>
<td>Motivation for targeting low income customer segments?</td>
<td>If a product can successfully be placed in this (extremely poor but large group of people) segment, it becomes economically important for a company.</td>
<td>Finds it good when people can participate in life and to witness normal things. Offering service for little/no money.</td>
<td>To easily solve their problems and start-ups have a very good possibility, because they often develop close to the customer. And they are extremely flexible, therefore, also surrounded by people with a lower income often can develop a good solution approach.</td>
<td>Give people opportunity to participate in life. Prevention of social exclusion.</td>
<td>Price-motive of the customer. Most functions are not used because people do not know about it or cannot handle the functions, therefore offering reduced products. But still to make money for a company.</td>
<td>High saturation for all other income classes. Status symbol is higher in low-income classes (Car sharing less applicable in low-income classes).</td>
<td>Access to property and access to consumption. To enable more consumption.</td>
<td>Allow as many people as possible to participate. Decrease threshold for participation.</td>
<td></td>
</tr>
<tr>
<td>Applicability of frugal innovations in Germany?</td>
<td>It has not as much potential as it has in other countries in Europe. Target group in Germany is not so big compared to developing countries.</td>
<td>Applicability is there but G. is a country that does not recognize frugal innovations. We honour disruption and improvement rather than invention and innovation.</td>
<td>Yes, definitely. Because ultimately, there are areas in Germany that may not have access to technologies, either, and there are also layers where the income is rather low. So basically in any case.</td>
<td>This type of innovation can be of fundamental importance in Germany, since we as an innovation society, are interested in products getting better and faster and bigger but often without any use at all.</td>
<td>More applicable and interesting in emerging markets than in industrialized countries. Yet, in our market there are products that have been reduced so widely that they do not fulfill the basic functions any more but can still be sold.</td>
<td>Depends on industry. Produce and introduce for masses to be more cost-efficient.</td>
<td>Application is ultimately unrestricted based on the pure analysis of the activity. Problem of usage. Exclusion of others to use certain property. Applicability is reduced in short-haul distances.</td>
<td>Does not believe it to be totally applicable in Germany due to lower income gap compared to emerging countries.</td>
<td></td>
</tr>
<tr>
<td>Other Examples known?</td>
<td>None.</td>
<td>MeeshaCar, TooGoodToGo, Nusheb26</td>
<td>None</td>
<td>Dacia cars</td>
<td>Primark, Kik, Oh! Tedi, MotoZ One</td>
<td>Pre-paid mobile communication</td>
<td>Other shared economy companies</td>
<td>Ryunir</td>
<td></td>
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<tr>
<td>IV. Product Characteristics</td>
<td>Core Functionality</td>
<td>Performance Level</td>
<td>Connectivity</td>
<td>Freedom</td>
<td>Energy Saving</td>
<td>Ruggedization</td>
<td>Affordability</td>
<td>No-Prep Strategy</td>
<td>Environmental Issues</td>
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<tr>
<td>Further criteria provided?</td>
<td>Nothing else</td>
<td>Flexibility</td>
<td>Flexibility</td>
<td>Branding (brands more demanded than store brands)</td>
<td>Branding (German brands are demanded)</td>
<td>Reference to public transport act (jurisprudence), Price recommendation.</td>
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<td></td>
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<td></td>
<td></td>
<td>Yes, definitely.</td>
<td>Yes, definitely.</td>
<td>Yes, through choice amongst different car classes</td>
<td></td>
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<tr>
<td>Competitive products with similar characteristics?</td>
<td>Within same mobility sector, no differences. Across all mobility services, the price is lower.</td>
<td>Same criteria and motivation for direct competitors, different criteria for indirect competitors.</td>
<td>Concepts are hardly different, no major core distinctions.</td>
<td>Only slight differences to competitors. Maybe the price.</td>
<td>Yes, products are similar and therefore direct competitors.</td>
<td>Not the same: Some are more into high quality (no core function and no no-frills), but more about life-style</td>
<td>Others do not have the critical mass. CO2-compensation, insurance package for riders, seat guarantee, ensured money for driver.</td>
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<tr>
<td>Self-reflection: Is own product considered 'frugal'?</td>
<td>Limited 'Yes', when focus on low income groups.</td>
<td>Frugal innovation as a byproduct, but not on purpose (according to definition).</td>
<td>Limited 'Yes' (Lack of personal knowledge).</td>
<td>Yes, definitely.</td>
<td>No, because the brands refer to a benchmark and you must not be worse than the benchmark. Otherwise no one will be buying the products.</td>
<td>Limited 'Yes' (only smallest and cheapest cars)</td>
<td>Yes according to criteria.</td>
<td>Yes (was surprised about the fit). Some connection between sustainability issues and frugality issues because latter one enhances the durability of a product.</td>
<td></td>
</tr>
<tr>
<td>Term: <em>BoP</em> is known?</td>
<td>About income classes and majority has low income compared to few rich.</td>
<td>Goes towards distribution of income and that people live with low income in emerging markets. Does not believe there is BoP in G.</td>
<td>Poorest of the poor with least possibilities and lowest income.</td>
<td>Certain social groups with fewer possibilities. Pyramid starts with rich at the top and goes down to poor people. Applied in emerging countries.</td>
<td>3 billion people in a global definition with less than $1 a day.</td>
<td>Biggest layer is at the bottom. Rich people at the top.</td>
<td>Going into direction of who can afford the least access to certain products/services and possibly have access to this property and service through frugal innovation.</td>
<td>It is the foundation of something. It attracts many people.</td>
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<tr>
<td>What is understood as BoP for Germany?</td>
<td>BoP in G: People who are unemployed, low-income earners &amp; low-wage income, unemployed people. Estimation of 15% of population.</td>
<td>Significantly different from developing countries. Question regarding possibilities and income. There is a BoP in every modern society.</td>
<td>Least income, no income, unemployed people.</td>
<td>Lowest in terms of income, wealth, education. In the global definition, not even unemployed people are defined as BoP. But in G, probably people below average income.</td>
<td>People with less than 60% of average income. Estimation of about 15% in terms of size for G.</td>
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<tr>
<td>BoP as customer group is known?</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Different term for BoP is used?</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<tr>
<td>V: BoP in Germany is currently being addressed?</td>
<td>Not in case of X01, but still much potential in BoP which is partly not explored yet.</td>
<td>Yes, potential is seen. BoP is not fully exhausted.</td>
<td>Yes, definitely. I believe that makes sense. There are companies where this economic approach is more important. And then there are also opportunities. There are many people and they must live somehow.</td>
<td>Yes, definitely. I believe, ultimately, all companies are successful, only if something can be earned. But the explicit focus on the BoP is perhaps rather a new concept, which is not yet fully explored in the market.</td>
<td>Wrote if the focus is on low-income budget customer groups as it is done by Kühn, Tietz and Frühmann.</td>
<td>Has doubts about the economic success because customer group is not big enough.</td>
<td>Yes, of course. Where certain needs are served and where you can offer services with the same quality at a lower price, you will find customers to buy it. Therefore, clearly, in any case, this is a relevant market.</td>
<td>Generally speaking yes, but not in the case of Cambio.</td>
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<tr>
<td>VI. Requirement for Success</td>
<td>Need to adapt characteristics (Q27)</td>
<td>Suggestions to adapt them?</td>
<td>Different terms are known for frugal innovations for BoP markets?</td>
<td>VII. Conclusion</td>
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<td></td>
<td>No</td>
<td>When focus on BoP, definition is quite good. Maybe should be about completely new products. Digitization.</td>
<td>None.</td>
<td>Social value: Make it possible for people to travel. Economic value: Sustainable business model for X01 and partners. Ecologic value: Happy to take care of the street. Which was present at development stages? Economic.</td>
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<td></td>
<td>Yes</td>
<td>Add &quot;social inclusiveness&quot; to support BoP. Digitization, flexibility.</td>
<td>None.</td>
<td>Revenues are generated. But not as important for people of BoP. Actually most dangerous because products need to be replaced more often.</td>
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<td></td>
<td>No</td>
<td>Suitable</td>
<td>None.</td>
<td>Social and ecological. Economic and social with first one as being more important. Ecofisc.</td>
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<td></td>
<td>Yes</td>
<td>Branding/Marketing to be added. Companies must provide warranty. Low performance level can be dangerous so cut this one out.</td>
<td>None.</td>
<td>Car sharing cars replace 7-15 private cars. More space for trees and bike paths. Less ecological index.</td>
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<td></td>
<td>Yes</td>
<td>Access to internet and online payment technology required.</td>
<td>None.</td>
<td>Quality of life increased in the cities. Enabling mobility.</td>
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<tr>
<td></td>
<td>No</td>
<td>Digitisation</td>
<td>None.</td>
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- (most relevant) | (equal to avail.) | (forefront) | (less important)
## Appendix 12: Grounded Qualitative Coding

<table>
<thead>
<tr>
<th>Open Coding</th>
<th>Axial Coding</th>
<th>Selective Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laws, Market Change (2x), Flexibility, Socio-Demographics, Societal Problem Solving (2x), Profit Orientation, Masses, Environmental Movement</td>
<td>Influencing Factors</td>
<td>- General Information</td>
</tr>
<tr>
<td>Masses (4x), Low Income Population (3x), Price-Conscious Customers</td>
<td>Core Customers</td>
<td>- Frugal Innovation</td>
</tr>
<tr>
<td>Regional, National, Europe (5x), Global</td>
<td>Market Focus</td>
<td>- Product Characteristics</td>
</tr>
<tr>
<td>No Prior Knowledge (8x)</td>
<td>State of Knowledge (Fl)</td>
<td>- Bottom of the Pyramid</td>
</tr>
<tr>
<td>Value Creation, Low-Income Focus (2x), Invisible Innovation, Ordinariness, Price Focus, Efficiency, Core Functionality (4x), Affordability (3x), More for Less, Scalability</td>
<td>Definition (Fl)</td>
<td>- Requirements</td>
</tr>
<tr>
<td>Economic Importance, Participation in Life (6x), Affordable Service/Products (3x), Market Saturation, Low Thresholds</td>
<td>Motivation to Address Low Income Customers</td>
<td>- Value</td>
</tr>
<tr>
<td>No Potential (2x), Context-Dependent Potential (4x), Potential (2x)</td>
<td>Assessment of Applicability</td>
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</tr>
<tr>
<td>No Examples (2x), One Example (2x), Several Examples (4x)</td>
<td>Abstraction of Examples</td>
<td></td>
</tr>
<tr>
<td>Core Functionality (7x), No Element</td>
<td>Core Functionality</td>
<td></td>
</tr>
<tr>
<td>Performance Level (4x), No Element (4x)</td>
<td>Performance Level</td>
<td></td>
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<tr>
<td>Usage-Centered (7x), No Element</td>
<td>Usage-Centered</td>
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</tr>
<tr>
<td>Ruggedization / Reliability (6x), No Element (2x)</td>
<td>Ruggedization / Reliability</td>
<td></td>
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<tr>
<td>Affordability (8x)</td>
<td>Affordability</td>
<td></td>
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<tr>
<td>No-Frills-Strategy (4x), No Element (4x)</td>
<td>No-Frills-Strategy</td>
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<tr>
<td>Environmental Issues (6x), No Element (2x)</td>
<td>Environmental Issues</td>
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<tr>
<td>Digitization / Connectivity (5x), No Element</td>
<td>Digitization</td>
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<tr>
<td>Relevant (4x), Not Relevant (4x)</td>
<td>Ability to Upgrade</td>
<td></td>
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<tr>
<td>Branding (2x), Law, Flexibility (2x), Price</td>
<td>Adaption of Criteria</td>
<td></td>
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<tr>
<td><strong>Recommendation, No Further Criteria (3x)</strong></td>
<td><strong>Competitive Comparison</strong></td>
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<tr>
<td><strong>Similar Characteristics (5x), Different Characteristics (3x)</strong></td>
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<tr>
<td><strong>Yes (4x), Limited ‘Yes’ (3x), No</strong></td>
<td><strong>Reflection of Frugality</strong></td>
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<tr>
<td><strong>Known (7x), Unknown</strong></td>
<td><strong>State of Knowledge (BoP)</strong></td>
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<tr>
<td><strong>Low Income Focus (5x), Poor Population (2x), Least Possibilities (3x), Foundation/Base</strong></td>
<td><strong>Definition (BoP)</strong></td>
<td></td>
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<td><strong>Unemployed (4x), Low Income (4x), Poor Population (2x), Least Possibilities, Education</strong></td>
<td><strong>Abstraction of German BoP</strong></td>
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<tr>
<td><strong>Known (8x)</strong></td>
<td><strong>Familiarity of BoP Customers</strong></td>
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<tr>
<td><strong>None (8x)</strong></td>
<td><strong>Alternative Connotations</strong></td>
<td></td>
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<tr>
<td><strong>Party but Unintentionally (6x), Party but more Involvement, Partly but Thresholds</strong></td>
<td><strong>Addressed BoP Sector</strong></td>
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<tr>
<td><strong>Potential (3x), Context-Dependent Potential (4x), No Potential</strong></td>
<td><strong>Economic-Driven Opportunity</strong></td>
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<tr>
<td><strong>Change (7x), No Change</strong></td>
<td><strong>Adaption of Characteristics</strong></td>
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<td><strong>New Products, Prioritization, Social Inclusiveness, Characteristics Suitable, Marking (2x), Internet Access (6x), Online Payment</strong></td>
<td><strong>Suggestions for Adaptation</strong></td>
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<td><strong>Downgrading, None (7x)</strong></td>
<td><strong>Alternative Connotation</strong></td>
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<td><strong>Affordability (7x), No Comment</strong></td>
<td><strong>Affordability</strong></td>
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<td><strong>Awareness (6x), Not Important, No Comment</strong></td>
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<td><strong>Availability (5x), Not Important (2x), No Comment</strong></td>
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<td><strong>Social Value (6x), No Social Value (2x)</strong></td>
<td><strong>Social Value Contributed</strong></td>
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<td><strong>Economic Value (6x), No Economic Value</strong></td>
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<td><strong>Ecologic Value (6x), No Ecologic Value (2x)</strong></td>
<td><strong>Ecologic Value Contributed</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Economic (3x), Social/Ecological (3x), Social/Economic, Social/Economic/Ecologic</strong></td>
<td><strong>Presence during Development</strong></td>
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<td>Appendix 13: Summary of Empirical Results</td>
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<tr>
<td>Industry?</td>
<td>Mobility Service</td>
<td>Entertainment sector</td>
<td>Food/Gastronomy</td>
<td>Retail</td>
<td>Retail</td>
<td>Mobility Service</td>
<td>Shared Economy</td>
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<td>Product/Service?</td>
<td>Transport</td>
<td>Linear TV</td>
<td>Platform</td>
<td>Non-Food</td>
<td>Food, Non-Food</td>
<td>Car Sharing</td>
<td>Platform</td>
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<td>Influencing Factors?</td>
<td>Laws, Market Change</td>
<td>Market Change, Flexibility</td>
<td>Societal Problem Solving</td>
<td>Societal Problem Solving</td>
<td>Profit Orientation</td>
<td>Socio-Demographics</td>
<td>Masses</td>
<td>Environmental Movement</td>
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<td>Addressed customer segment?</td>
<td>Masses Male, Low Income</td>
<td>Masses</td>
<td>Low Income</td>
<td>Price Conscious Customers</td>
<td>Masses</td>
<td>Low Income</td>
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<td>Addressed markets beside Germany?</td>
<td>Europe Europe</td>
<td>Industrialized Countries</td>
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<td>Regional</td>
<td>Global</td>
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<td>Term 'Frugal Innovation' is known?</td>
<td>No Knowledge, Preparation</td>
<td>No Knowledge, Preparation</td>
<td>No Knowledge, Preparation</td>
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<td>How to define 'frugal innovation'?</td>
<td>Value Creation, Low Income</td>
<td>Invisible Innovation, Ordinariness, Price</td>
<td>Efficiency, Core function, Affordability</td>
<td>Core Function</td>
<td>Core, Affordability</td>
<td>Affordability, Low Income</td>
<td>More for Less</td>
<td>Core, Scalability</td>
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<td>Motivation for targeting low income customer segments?</td>
<td>Successful Positioning, Economically Important Participation, Affordable Services</td>
<td>Participation, Affordable Products</td>
<td>Participation</td>
<td>Affordable Products</td>
<td>Market Saturation, Participation</td>
<td>Participation, Share Property</td>
<td>Participation, Low Threshold</td>
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<tr>
<td>Applicability of frugal innovations in Germany?</td>
<td>No Potential</td>
<td>Context-Dependent Potential</td>
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<td>Other Examples known?</td>
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<td>Performance Level</td>
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<td>Ruggedization</td>
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<td>Affordability</td>
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<td>Environmental Issues</td>
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<td>Digitization/Connectivity</td>
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<td>Ability to Upgrade?</td>
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<td>Further criteria provided?</td>
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<td>Flexibility</td>
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<td>Branding</td>
<td>Branding</td>
<td>Law, Price Recommendation</td>
<td>No Further Criteria</td>
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<td>Competitive products with similar characteristics?</td>
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<tr>
<td>Self-reflection: Is own product considered &quot;frugal&quot;?</td>
<td>Limited Yes</td>
<td>Yes, Not Intentionally</td>
<td>Limited Yes</td>
<td>Yes</td>
<td>No</td>
<td>Limited Yes</td>
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<td>Term &quot;Bol&quot; is known?</td>
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<td>How is it defined?</td>
<td>Low Income</td>
<td>Low Income</td>
<td>Poor, Least Possibilities</td>
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<td>Low Income, Least Possibilities</td>
<td>Foundation, Base</td>
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<td>What is understood as Bol for Germany?</td>
<td>Unemployed, Low Income</td>
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<td>Poor, Least Possibilities</td>
<td>Unemployed, Low Income</td>
<td>Poor, Employed, Education</td>
<td>No, Unintentionally</td>
<td>Partly, Intentionally, Thresholds</td>
<td>Less Than Average</td>
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<td>Bol as customer group is known?</td>
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<td>Different term for Bol is used?</td>
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<td>Bol in Germany is currently being addressed?</td>
<td>Partly, Unintentionally</td>
<td>Partly, Unintentionally</td>
<td>Partly, More Involvement</td>
<td>Partly, Unintentionally</td>
<td>Partly, Unintentionally</td>
<td>Partly, Unintentionally, Thresholds</td>
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<td>Economic profit through frugal innovations in Bol markets are considered being achievable?</td>
<td>Context-Dependent Potential</td>
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<td>Potential</td>
<td>Context-Dependent Potential</td>
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**V. Requirements**
- Need to adapt characteristics (Q4)?
- Suggestions to adapt them?
- Different term is known for frugal innovations for Bol markets?
- Affordability
- Awareness
- Acceptability
- Availability

**VI. Value**
- Social value
- Economic value
- Ecologic value
- Which was present at development stages? Economic, Economic, Social, Ecologic, Economic, Social, Ecologic, Social, Social, Ecologic, Social
Appendix 14: Criteria Onion of Frugal Innovations in Germany