

FUNDAÇÃO GETULIO VARGAS
ESCOLA DE ADMINISTRAÇÃO DE EMPRESAS DE SÃO PAULO

**DIFFUSION OF FRUGAL INNOVATION AND INNOVATIVENESS IN
LOW-INCOME CONTEXTS**

PHILIPP MARGRAF

SÃO PAULO

2019

PHILIPP MARGRAF

**DIFFUSION OF FRUGAL INNOVATION AND INNOVATIVENESS IN LOW-INCOME
CONTEXTS**

Thesis presented to Escola de Administração de
Empresas de São Paulo of Fundação Getulio
Vargas, as a requirement to obtain the title of
Master in International Management (MPGI).

Knowledge Field: Gestão e Competitividade em
Empresas Globais

Advisor: Prof. Dr. Edgard Barki

SÃO PAULO

2019

Margraf, Philipp.

Diffusion of frugal innovation and innovativeness in low-income contexts / Philipp Margraf. - 2019.

81f.

Orientador: Edgard Elie Roger Barki.

Dissertação (mestrado profissional MPGI) – Fundação Getulio Vargas, Escola de Administração de Empresas de São Paulo.

1. Difusão de inovações. 2. Consumidores de baixa renda. 3. Comportamento do consumidor. 4. Consumo (Economia) - Aspectos sociais. I. Barki, Edgard Elie Roger. II. Dissertação (mestrado profissional MPGI) – Escola de Administração de Empresas de São Paulo. III. Fundação Getulio Vargas. IV. Título.

CDU 658.89

PHILIPP MARGRAF

DIFFUSION OF FRUGAL INNOVATION AND INNOVATIVENESS IN LOW-INCOME

CONTEXTS

Thesis presented to Escola de Administração de Empresas de São Paulo of Fundação Getulio Vargas, as a requirement to obtain the title of Master in International Management (MPGI).

Knowledge Field: Gestão e Competitividade em Empresas Globais

Approval Date

09/12/2019

Committee members:

Prof. Dr. Edgard Barki

Prof. Dr. Delane Botelho

Prof. Dr. Marcelo Caldeira Pedroso

Abstract

This research examines the Diffusion of Innovation (DOI) in Base of the Pyramid (BOP) markets in the context of Frugal Innovation as well as the characteristics of innovative consumers in low-income markets. It is divided into one qualitative, exploratory and one quantitative study.

Study 1 analysed the Diffusion of Frugal Innovation and consumption behaviour in Base of the Pyramid (BOP) markets, using Rogers' (1983) Diffusion of Innovation (DOI) theory to guide interviews with 10 marketers that introduced frugal innovations into the BOP market. Study 2 analysed innovative consumers at the BOP in the favelas of Heliopolis and Jardim Angela in Sao Paulo, Brazil. The research was conducted with a questionnaire that was handed out in person. It included the Motivated Consumer Innovativeness scale to identify innovative consumers and tested its correlates with *Opinion Leadership*, *Price Sensitivity*, *Susceptibility to Normative Influence* and *Consumer Independent Judgement* as well as the socioeconomic characteristics of low-income consumers.

The research found that the diffusion of frugal innovations at the BOP differs from conventional innovations due to the characteristics of low-income markets and frugal innovations. Word of mouth plays a far more important role in a market where modern means of advertising are hardly used, and *Affordability* has to be ensured by low prices and additional financing options to reach large parts of the population. At the same time successful innovations need to meet high quality standards. Furthermore, it was established that there exist innovative consumers in BOP markets that are looking for functional products that solve a need for them and products that bring them joy and pleasure. These innovative consumers are more price sensitive than their up-market equivalents and they tend to be strongly influenced by the beliefs and opinions of their peers in their purchasing behaviour. Also, innovative consumers tend to be younger and more active on social media, although this medium does only play a minor role in the marketing and communication efforts of companies.

However, a slow transition to a more digital consumer at the BOP is taking place with digital financial services and telemedicine apps being among the most successful frugal innovations. This provides an opportunity for companies to further increase their communication with remote consumers in low-income contexts and enhance their understanding of this part of the population.

Key words: Diffusion of Innovation, Frugal Innovation, Innovativeness, Low-income, Base of the Pyramid

Resumo

Essa pesquisa analisa a difusão de inovações (DOI) em mercados da base da pirâmide BOP no contexto de inovação frugal, assim como as características de consumidores inovadores em mercados de renda baixa. Ela é dividida em uma parte qualitativa, exploratória e em um estudo quantitativo.

O estudo 1 analisou a DOI e o comportamento de consumo nos mercados da base da pirâmide, usando a teoria Difusão de Inovação de Rogers (1983) como guia para entrevistar 10 executivos da área de marketing que tinham introduzido inovações frugais no Mercado de BOP. Já o estudo 2 analisou consumidores inovadores da Base da Pirâmide em Heliópolis e Jardim Ângela na cidade de São Paulo, Brasil. A pesquisa foi conduzida por meio de um questionário estruturado que foi realizado presencialmente. O questionário incluiu a escala *Motivated Consumer Innovativeness* para identificar consumidores inovadores e testou as correlações de *Tendência a Inovar* com *Liderança de Opinião*, *Sensibilidade a Preços*, *Suscetibilidade a Influência Normativa* e *Julgamento Independente do Consumidor*, assim como as características socioeconômicas de consumidores de baixa renda.

A pesquisa identificou que a difusão de inovações frugais na BOP difere de inovações convencionais pelas características de mercados de baixa renda e as próprias características de inovações frugais. Comunicação boca a boca tem uma função muito mais importante em um mercado onde os meios promocionais mais modernos quase não são usados e *Acessibilidade* tem que ser assegurado por preços baixos e opções adicionais de financiamento para alcançar grandes partes da população. Ao mesmo tempo, inovações com sucesso precisam ter uma alta qualidade. Além disso, identificou-se consumidores inovadores nos mercados da BOP que procuram produtos funcionais, que resolvem uma necessidade e produtos que provocam sensações de prazer e alegria. Esses consumidores inovadores são mais sensíveis a preços que consumidores inovadores nos mercados de alta renda e tendem a ser influenciados fortemente pelas crenças e opiniões dos pares deles no comportamento de consumo. Além disso, consumidores inovadores tendem a ser mais jovens e mais ativos em redes sociais, embora esse meio de comunicação tenha uma relevância menor no marketing e na comunicação das empresas.

No entanto, está ocorrendo uma transição lenta para um consumidor mais digital na BOP com serviços financeiros digitais e aplicações de telemedicina, sendo essas áreas onde se identifica as inovações frugais com mais sucesso.

Esses achados ressaltam uma oportunidade para as empresas continuarem a aumentar a comunicação com consumidores mais remotos em contextos de baixa renda e melhorar o entendimento desse segmento da população.

Palavra chave: Difusão de inovações, inovação frugal, innovativeness, baixa renda, base da pirâmide

Content

| | | |
|---------|--|----|
| 1 | Introduction..... | 10 |
| 2 | Knowledge Review | 13 |
| 2.1 | Base of the pyramid – low-income consumers | 13 |
| 2.1.1 | Development of the Base of the Pyramid Proposition..... | 14 |
| 2.1.2 | Consumption behaviour at the BOP..... | 21 |
| 2.2 | Innovation in and for the Base of the Pyramid | 25 |
| 2.2.1 | Disruptive Innovation | 25 |
| 2.2.2 | Reverse Innovation..... | 26 |
| 2.2.3 | Incremental Innovation | 26 |
| 2.2.4 | Frugal innovation..... | 27 |
| 2.3 | Diffusion of innovation..... | 32 |
| 2.3.1.1 | Diffusion of Innovations (DOI) theory by Rogers (1983) | 33 |
| 2.4 | Innovativeness..... | 37 |
| 2.4.1 | Concept and Measurement of Innovativeness | 37 |
| 2.4.2 | Correlates of Innovativeness | 39 |
| 2.5 | Conclusion knowledge review..... | 40 |
| 3 | Study 1: Exploratory interviews with executives of frugal innovation companies | 42 |
| 3.1 | Methodology | 42 |
| 3.2 | Discussion of results | 44 |
| 3.2.1 | Characteristics of the low-income consumer..... | 44 |
| 3.2.2 | Frugal innovation for the poor | 47 |
| 3.2.3 | Diffusion of innovations | 47 |
| 3.3 | Conclusion | 53 |
| 4 | Study 2: Innovativeness and its correlates..... | 54 |
| 4.1 | Methodology | 54 |
| 4.2 | Results | 55 |
| 4.2.1 | Descriptive Statistics..... | 55 |
| 4.2.2 | Inferential Statistics..... | 57 |
| 4.3 | Discussion & Conclusion..... | 62 |
| 5 | Final Considerations | 63 |
| 5.1 | Conclusion | 63 |
| 5.2 | Limitations and future research | 64 |
| 6 | References..... | 65 |
| 7 | Appendix..... | 71 |
| 7.1 | Appendix A: Interview questions | 71 |

| | | |
|-----|--|----|
| 7.2 | Appendix B: Questionnaire study 2 in English..... | 72 |
| 7.3 | Appendix C: Questionnaire study 2 in Portuguese..... | 76 |

LIST OF TABLES

| | |
|---|----|
| Table 1: Most common definitions of Frugal Innovation..... | 28 |
| Table 2: Comparison of innovation concepts | 30 |
| Table 3: 20-item Motivated Consumer Innovativeness (MCI) scale | 38 |
| Table 4: Interviews Frugal Innovation Professionals | 43 |
| Table 5: Socio-economic data | 55 |
| Table 6: Arithmetic means of Overall innovativeness and Innovativeness dimensions | 57 |
| Table 7: Spearman Correlation Coefficient..... | 58 |
| Table 8: P-values Chi Square test – Age Group, Education, Income and Social Media..... | 59 |
| Table 9: Averages of Scale Values of SI, FC and OL by Age Group | 60 |
| Table 10: Averages of Scale Values of OI and HI by Education level | 60 |
| Table 11: Averages of Scale Values of FI, CIJM, OI, SI, HI and CI by Income level | 61 |
| Table 12: Averages of Scale Values of SI and PS by Social Media Usage..... | 61 |

LIST OF ACRONYMS

BOP: Base of the Pyramid

CI: Cognitive Innovativeness

CIJM: Consumer Independent Judgement Making

CSI: Cognitive/Sensory Innovativeness

DOI: Diffusion of Innovation

DSI: Domain Specific Innovativeness

FC: Funk Culture

FI: Functional Innovativeness

GCI: Global Consumer Innovativeness

HI: Hedonic Innovativeness

II: Innate Innovativeness

MCI: Motivated Consumer Innovativeness

MNC: Multi National Company

NGO: Non-governmental Organization

NI: Susceptibility to Normative Influence

OI: Overall Innovativeness

OL: Opinion Leadership

PS: Price Sensitivity

SI: Social Innovativeness

TOP: Top of the Pyramid

1 Introduction

Developing markets are increasing in importance mainly because of two reasons. Firstly, growth rates in the developed world are slowing compared to high growth in developing economies. Emerging markets grow at rates between 5 and 10 percent, while rates in the West are close to zero (Payaud, 2014). The second reason is the discovery of high-volume markets at the Base of the Pyramid (BOP) and the development of business models and strategies for this market (e.g. Prahalad, 2005; London and Hart, 2010; Cañeque, 2015).

According to current estimates, 3.5 billion worldwide live below the BOP threshold of 8 USD per day¹. Tapping BOP consumer has proven to be very different from Top of the Pyramid (TOP) markets. Markets suffer from poor infrastructure and resource scarcity among other problems which largely made conventional innovation and marketing practices unsuccessful (London and Hart, 2010). While at the beginning companies introduced products that were simply smaller sized versions of e.g. shampoo or detergent (Prahalad, 2005), modern BOP strategies include the embedment of companies that do business with the BOP in an ecosystem of various actors, ranging from educational institutions and microfinance firms to NGOs and government agencies that partner up in areas, such as innovation, distribution and business modelling (Cañeque, 2015).

Higher demand and interest in BOP markets is increasingly matched by growing supply of local and global resource (Govindrajana and Ramamurti, 2011). This led to the emergence of several innovation concepts that do not focus initially on Western economies but emerging markets, with the main types of innovations being *Disruptive Innovation* (e.g. Christensen, 1997), *Reverse Innovation* (e.g. Govindarajana and Ramamurti, 2011), *Incremental Innovation* (e.g. Varadarajana, 2009) and *Frugal Innovation* (e.g. Zeschky et al., 2014; Hossain et al., 2016). While these concepts complement each other, *Frugal Innovation* is the only one that is created to serve directly consumers at the BOP.

Frugal innovations are not stripped-down versions of products or services from developed economies but “...a product, service or business model that significantly reduces cost at an optimal performance level to serve formerly unserved or underserved consumers” (adapted by author from definitions from scholarly literature, e.g. Zeschky et al. (2014)). One example of this is General Electric’s frugal cardiogram which simplified cardiograms used in developed countries and made it portable to reach remote rural areas in India and China, at a fraction of the cost (Rosca et al., 2017). Another one is M-Pesa, a paying service which enables users to send money via SMS that originated in Kenya, which enables users to send money via SMS (Wellen and van Dijk, 2019).

With the growing importance of emerging markets and frugal innovations the relevance of understanding, how they diffuse and are adopted by low-income consumers, increases. Diffusion and adoption models for conventional innovations in developed economies have been

¹ Source: <https://www.strategy-business.com/article/The-New-Fortune-at-the-Bottom-of-the-Pyramid?gko=c5f11>
Accessed on October 18th 2019

researched and tested extensively, with models such as Rogers' *Diffusion of Innovation* (DOI) theory receiving over 5,000 publications (Rogers, 2004) or the Bass model being tested in year-long research, proving its merit (Chandrasekaran and Tellis, 2007). Furthermore, substantial research exists on how to identify innovative consumers (e.g. Vandecasteele and Geuens, 2010) as well as the characteristics of early adopters and innovators (e.g. Mahajan et al., 1990), which makes it easier to target these consumers.

However, there exists very little research on neither the diffusion of innovations at the BOP, the diffusion of frugal innovations and on innovative consumers at the BOP, although there exists evidence that consumption behaviours differ significantly from developed countries (e.g. Peres et al., 2010). Rare examples of studies include a study by Ratcliff and Doshi (2016) that used the Bass diffusion model to analyse the diffusion of 3 innovations at the BOP but in a rather limited geography. Another one is a paper by Nakata and Weidner (2012) that proposes a new model to predict adoption of products at the BOP but does not test it in any way. Furthermore, the low number of diffusion studies of developing countries that exist has been focusing on the level of institutions or countries, rather than understanding the adoption behaviour of the low-income consumer better (Zanello et al., 2016). The inadequacy of conventional diffusion models has also been criticized by researches of frugal innovation (Hossain et al., 2016). Regarding *Innovativeness*, due to the lack of research regarding the BOP (Kaushik and Rahman, 2014), one cannot assume that findings about Western consumers will hold true in the same way. This shows a significant gap in research regarding the diffusion and adoption of frugal innovations as well as *Innovativeness* in the low-income context.

Therefore, this research has as main objective to better understand the process of diffusion of frugal innovation and the level of *Innovativeness* in low-income contexts. Accordingly, this thesis investigates two research questions that are answered in two distinctive studies:

1. ***“What is marketers’ view on the diffusion process of frugal innovations in low-income contexts and how does it differ from the diffusion of conventional innovations in the up-market?”***
2. ***“What are the characteristics of innovative consumers in low-income contexts?”***

The first study has the objective of gaining a better understanding of the diffusion of frugal innovations among low-income consumers by conducting interviews with marketers of companies that have introduced frugal innovation in the low-income marketplace. The research followed Rogers' DOI theory, using exploratory questions that cover its main aspects.

The second study has the objective to identify innovative consumers among low-income consumers regarding their socio-economic statistics as well as constructs, such as *Opinion Leadership* or *Price Sensitivity*.

To reach its objectives, this thesis is divided in 5 parts as follows:

1. This introduction that presents the importance of the theme and the objective of the research.
2. Knowledge review covering the following topics:
 - a. Development of the Base of the Pyramid proposition and Consumption Behaviour at the Base of the Pyramid
 - b. Types of Innovation at the Base of the Pyramid
 - c. Diffusion of Innovation
 - d. *Innovativeness*
3. Exploratory study of marketers' view on the Diffusion of Frugal Innovations following Rogers' (1983) Diffusion of Innovation theory.

4. Quantitative study of Innovativeness of low-income consumers in the favelas of Angela Jardim and Heliopolis in Sao Paulo, Brazil.
5. Final Considerations

2 Knowledge Review

The Knowledge Review starts with the analysis of the Base of the Pyramid (BOP) and the evolution of its definition and how companies adapted their strategies to reach this market segment over time. The steps of development of the BOP proposition are presented as BOP 1.0, BOP 2.0 and BOP 3.0. Since this research aims at receiving a better understanding about the consumer side of adoption and diffusion of innovation in the BOP market, a special focus is given on the consumption behaviour of low-income consumers.

The second part of the knowledge review defines different types of innovations in the BOP market. While *Incremental Innovations*, *Disruptive Innovations* and *Reverse Innovations* will be explored, the focus lies on *Frugal Innovation* as the most promising type of innovation to improve the lives of low-income consumers and alleviate the impact of poverty at the BOP (e.g. Kahle et al., 2013). Furthermore, frugal principles need to be employed to guide companies to innovate with scarce resources to face the sustainability challenges of the future (e.g. Rosca et al., 2016; Basu et al., 2013).

In the third part diffusion and adoption theories are introduced with the *Diffusion of Innovation* (DOI) theory by Rogers (2003) being analysed in depth. This theory is chosen, as it has been widely tested in the Western world (e.g. Meyer et al., 1996) and it is a rather comprehensive theory that covers numerous aspects that influence diffusion and adoption. Therefore, it provides many areas for exploratory research on these concepts in BOP markets, which were largely neglected by scholars until now (Ratcliff and Doshi, 2016).

The fourth part of the knowledge review analyses *Innovativeness* as one particular aspect of diffusion studies. Scholars agree that it is important to find the most innovative consumers and how to characterize them. While numerous *Innovativeness* scales have been developed and tested in Western markets, virtually no such research was conducted in emerging or low-income markets. The explorative *Study 1* (described later in this research paper) yielded similar results, showing that marketers of frugal innovations are ambiguous about who the innovators in low-income markets are. Therefore, the chapter introduces the *Motivated Consumer Innovativeness* (MCI) Scale from Vandecasteele and Geuens (2010) and analyses the following correlates of consumer *Innovativeness*: *Price Sensitivity*, *Opinion Leadership* and *Susceptibility of Interpersonal Influence*.

2.1 Base of the pyramid – low-income consumers

The latest estimates conducted in 2015 by the World Bank found 10 percent of the world's population, or 736 million people living in extreme poverty which was set at living with less than 1.90 USD per day. Poverty has gradually reduced over time, as since 1990 1.1 billion people moved out of poverty, however, the reduction has progressed unevenly. More than 50% of the extreme poor live in Sub-Saharan Africa where the absolute number of people living in extreme poverty even increased. The majority of the extreme poor lack education, are employed in agriculture, are young and live in rural areas.²

However, the BOP consists of more than the extreme poor. Globally, people that earn less than 8 USD per day belong to the BOP (Cañeque, 2015). In 2017 those were 3.5 billion people

² Source: <https://www.worldbank.org/en/topic/poverty/overview> Accessed on November 14th 2019

worldwide.³ This amount is not the same for every region and there are significant geographical differences. In Latin America, for example, the threshold is set at 10 USD per day, resulting in 405 million people or 70% of the population belonging to this market. Not all of them are extremely poor and the BOP is also not one homogenous group within a region. Those earning between 4 and 10 USD are called *vulnerable* as opposed to *poor*.⁴

Putting an income label on the poor and the BOP is already difficult. What is more, is that a number itself does not explain, what poverty comprises. People in extreme poverty often live in fragile countries without access to education, electricity or clean water. A multidimensional definition also used by the World Bank, that includes consumption, education and access to basic utilities, arrives at a 50% higher number of people living in poverty.⁵

Finally, living in poverty has an additional psychological component of people not seeing themselves as members of society, struggling with severe feelings of low self-esteem and not belonging (e.g. Viswanathan et al., 2010; Chikweche and Fletcher, 2010). Only one example is that “poor” looking people get stopped more often by the police (Yurdakul et al., 2017).

This chapter analyses the development of the BOP proposition from Prahalad and Hart (2002) over critiques, such as Karnani (2007), to the inclusive BOP 2.0 approach of London and Hart (2010) to the newest generation of BOP strategies (Cañeque and Hart, 2015).

After that, BOP consumers will be analysed along the axis of *Confidence* and *Self-esteem*, *Social Environment*, *Relationships* and *Word of Mouth* and *Branding at the BOP* to improve the understanding of their consumption behaviour.

2.1.1 Development of the Base of the Pyramid Proposition

Base of the Pyramid 1.0

The term Bottom of the Pyramid was drawn into the mainstream with the article “The Fortune at the Bottom of the Pyramid” by Prahalad and Hart (2002). The authors argue that 4 billion of the world’s population that live on less than 1,500 USD per year, while for more than a billion daily income is estimated as less than 1 USD per day. The poor are described as an exciting invisible opportunity for MNCs in the western world that formerly have seen the market as unattainable due to their cost structures that would not allow them to compete profitably at the BOP and the lack of purchasing power as well as their disinterest regarding new technology, them being neither value- nor brand-conscious, and the difficulty of distribution and reaching them (Prahalad and Hart, 2002).

However, this is regarded as a misconception. Consumers at the BOP are aspiring a better life and require great quality products at a low price as well as advanced technology. Furthermore, the development of cities in the developing world from Africa, over Asia to Latin America, will create places with an intense density of low-income consumers, solving large parts of the distribution problem (Prahalad, 2005). Apart from that, the market potential of serving between 4 to 5 billion people and an economy of around 13 trillion USD in PPP holds great opportunities for the private sector (Prahalad, 2005).

Despite the great market potential, Prahalad (2005) was convinced of the positive impact of the BOP proposition. Targeting this consumer and creating markets at the BOP would also lead to

³ Source: <https://www.strategy-business.com/article/The-New-Fortune-at-the-Bottom-of-the-Pyramid?gko=c5f11> Accessed on November 14th 2019

⁴ Source: <https://www.inclusivebusiness.net/ib-voices/base-pyramid-mexico-insights-idb-base-forum-2015> Accessed on November 14th 2019

⁵ Source: <https://www.worldbank.org/en/topic/poverty/overview> Accessed on November 14th 2019

an eradication of poverty, as large private enterprises work with local entrepreneurs (Prahalad, 2005). One part of that is alleviating the so-called “poverty penalty”. Because of local monopolies and poor distribution, low-income consumers do not only have less money but pay significantly more, even for basic products such as rice (Prahalad, 2005). Additionally, it gives them dignity and choice which they formerly lacked (Prahalad, 2005). Prahalad and Hart (2002) describe MNCs as the entities that will have to develop the necessary innovations and introduces examples where they are already doing so. In order to do so, they have to create buying power by access to credit or higher income generation, improving the access to products, shape the consumption aspirations of the poor and develop targeted solutions for them.

Critique of the Base of the Pyramid Proposition

When Prahalad and Hart (2002) coined the term BOP and Prahalad (2005) described the great opportunities at the BOP in his book *The Fortune at the Bottom of the Pyramid*, their view was challenged. Karnani (2007) argues that the fortune at the BOP is largely exaggerated. While Prahalad talks about a market of 13 trillion USD in PPP, in Karnani’s (2007) view a global market of 0.3 trillion USD is more realistic. Furthermore, geographic dispersion makes it difficult and expensive to reach consumers, scale advantages are difficult to realize (Karnani, 2007). Also, as they spend already 80% of their income on basic necessities, such as food, clothing and fuel, there is little money left to be spent on aspirational products (Karnani, 2007). It seems questionable that women that have less than 2 USD per day should spend their money on eye-liner or lipstick (Davidson, 2009). Additionally, a large part is spent on tobacco and alcohol (Banerjee and Duflo, 2007; Davidson, 2009).

The examples of MNCs that Prahalad and Hart (2002) use Karnani (2007) identifies as either not targeting consumers of the BOP but more affluent consumers or are not profitable. He goes even further and says that marketing products to the poor that they cannot afford is dangerous, as they are easier deceived by marketing and their welfare might be distorted (Karnani, 2007). The reason is that low-income consumers not only have less money at their hand but are also poorer in terms of education and lack the experience to evaluate advertising claims that Western consumer are much more used to (Davidson, 2009).

One particular case is that of Grameen Bank and the rise of Microfinance, which was claimed to play an important role in alleviating poverty, especially of poor females, leading to its “inventor” Muhammad Yunus receiving the Nobel Peace Prize (Bateman and Chang, 2012). However, in the awakening of microfinance the Grameen bank and other microfinance operations depend on the constant inflow of subsidized capital which again raised the question of profitability at the BOP and, when microfinance institutions opened up to a more profitable and neo-liberal business model, interest rates of the poor increased up to 195% and over-indebtedness, massive client withdrawal and growing defaults led to meltdowns of microfinance industries in various countries around the globe, such as Morocco, Nicaragua, Pakistan and Bosnia (Bateman and Chang, 2012).

Furthermore, relying solely on MNCs will not solve the issues, as the government continues an important role in guaranteeing education, safety and infrastructure, among other things (Karnani, 2007). The discourse about the BOP and the role of the private sector reduces the attention paid to the fact that governments are failing to provide clean water and sanitation which should not be an accepted fact and is unlikely to be alleviated by being able to buy a fridge or television (Karnani, 2007). Karnani (2007) closes his argument, saying that the real fortune at the bottom of the pyramid is much smaller and will only be reached by improving skills and productivity of the poor and creating more employment opportunities.

Critics of the BOP proposition, such as Karnani (2007), and sceptics, such as Donovan (2009), identified that the BOP propositioned had been flawed in 3 particular aspects. First, the size of

the market and, therefore, the market potential was significantly lower than the estimates of Prahalad (2002), particularly the market for products that are not covering the basic necessities consumers need for survival. Secondly, MNCs are not able to play the role on their own that Prahalad had hoped for, but governments will be the decisive actors to provide infrastructure, political stability, security and education to improve the situation of people at the BOP. Third, and finally, using Western business models and adapting merely the product size or compromise quality in order to ensure lower prices will not be enough if the BOP proposition shall lead to a reduction of poverty. MNCs will need to truly embrace principles of social responsibility (Donovan, 2009), foster skills and create employment, working together with low-income consumers.

Base of the Pyramid 2.0

Simanis and Hart (2008) reformulate the BOP proposition as BOP 2.0 in *The Base of the Pyramid Protocol: Toward Next Generation BOP Strategy* where they admit some of shortcomings of “first generation” BOP strategies. Differences of BOP 2.0, compared to the first generation, are to see the BOP as a business partner, rather than as a mere consumer, to engage in a dialogue and create direct and personal relationships, facilitated by NGOs, resulting in “Business Co-Venturing”, as opposed to “Selling to the Poor” (Simanis and Hart, 2008). Furthermore, the problems and difficulties of markets at the BOP are described in a more realistic manner. The lack of infrastructure forces businesses in many cases to act cross-sectoral. For example, a telecommunication company needs to provide its own energy grid, since there is no alternative to it (London and Hart, 2010).

For many products there exists no market at the BOP. One reason is that consumers do not have the knowledge regarding the necessity of a product or no familiarity. It might be unknown to a person at the BOP that dirty water cause sickness which deems a water filter unnecessary. On the other hand, the consumers simply do not have the money to afford it (Simanis, 2010). In both cases a market needs to be created, before it can be penetrated. Another difficulty in the absence of a market is that there is no competition to benchmark the quality of a product or to find the right entry price. That is not only a problem for companies but also for consumers that do not really know how to assess the quality of a service or product they are fully unfamiliar with (Simanis, 2010).

However, the core of BOP 2.0 strategies lies in Co-Creating Mutual Value with the BOP (Simanis and Hart, 2008; London and Hart, 2010; Nahi, 2016). Simanis and Hart (2008) see co-creation as a process that creates value for all parties involved in each stage of the business creation process. It needs to be a reciprocal value creation process where companies work continuously with the consumer in the development of a product (Dey et al., 2016). This is important, as many initiatives at the BOP by large MNCs, such as Unilever or Hewlett-Packard, in the past have been troubled by being top down approaches and failing to properly engage with the consumer at the BOP (Nahi, 2016). Although, propagated by many scholars that they need to be seen as co-creators, the majority of examples show that the poor end up as being mere recipients of BOP initiatives. One example comes from SC Johnson. For the development of a product the company stayed 3 months with a community to learn from it. However, in the end it delivered a solution that had been developed with as US funded NGO, rather than with the community together (Kolk et al., 2014).

Difficulties in this process of co-creation come, for example, from the fact that people engaging in it come from very different backgrounds, regarding education, culture and material circumstances, among others. Therefore, to engage in co-creation both parties need to be able to be open and appreciate and recognize the knowledge, capabilities and know-how that the other party brings to the table (Nahi, 2016). Simanis and Hart (2008) created a protocol for business strategies for the second generation of BOP businesses that follows three phases. In

the first phase the community opens up to the creation of a new business idea, forming a project team and nurturing the entrepreneurial capabilities within the community. The outcome of phase one is a value proposition that is both concrete enough to keep the project going but leaves room for creativity to create something new that did not exist in the community before, regarding technology, service or product (Simanis and Hart, 2008). In this phase but also as an ongoing need, establishing trust within the community is key, since communities have seen numerous initiatives before and politicians that failed to keep promises (Kennedy, 2010).

In phase 2 the project team is strengthened to represent the key segments of the community regarding their skills and capabilities but also to ensure wide spread support for the project (Simanis and Hart, 2008). Continuous commitment is shown by the corporation and developed by the community (Simanis and Hart, 2008). Knowledge and capability gaps within the project team are identified and with action learning where both the corporate partners and the community members act like teachers and learn. This way it is ensured that the community knows basic business concepts, such as pricing and brand building, and that the members of the corporation understand the local context (Simanis and Hart, 2008). The outcome of phase 2 is a business prototype (Simanis and Hart, 2008).

In phase 3 further capabilities are developed that are necessary for continuing the business, such as dealing with customer feedback, accounting or logistics (Simanis and Hart, 2008). Furthermore, demand is generated by vesting the community in the business success, contests are held where the community designs part of the commercial offering and brand issues, and the supply chain is embedded in the community if possible (Simanis and Hart, 2008). Finally, the scope of the business is continuously expanded and shaped in “business experiments” where the corporate partner and the community work side-by-side (Simanis and Hart, 2008).

As the venture grows, the success lies in building a BOP-centric management team which often proves difficult, since high potential managers usually lack the experience of low-income contexts and do not want to work for low salaries, given their wide range of option. Possibilities are to connect with programs that send experienced managers to assignments in low-income communities or to collaborate with high-qualified young professionals (Kennedy, 2010). Constant focus on achieving cost reduction is another point, as products and services at the BOP can only succeed if affordable to the masses. This is achieved through high-scale operations and the continuous effort to optimize scarce resources (Kennedy, 2010).

Although there is some consensus that co-creation is an essential part of working with the BOP, the extent of it is disputable (Nahi, 2016). From a business perspective, it might be enough to engage with NGOs as sources of expertise or partner with institutions and business partners. However, when thinking of cocreation as a mean to reduce poverty, this might not be enough. Working together with communities not only unlocks substantial creative potentials, but also leads to a feeling of empowerment and a reduction of poverty, especially, when poverty is not only seen in economic terms (Nahi, 2016).

A successful example of a BOP 2.0 strategy comes from the Patrimonio Hoy project of the Mexican cement manufacturer CEMEX that embraced the BOP principles to *be patient, stay longer and come back*. The management realized that even through the analysis of secondary data and numerous discussions with partners, they were not able to fully understand the BOP market in Mexico. Therefore, the leadership team formed meaningful connections with the community over several months that were maintained also after the immersion period ended. The key of their access was to see the community members as their colleagues, teachers and advisors (London, 2010). For example, the company introduced a financing scheme where three consumers joined together to increase their purchasing power. Their efforts took years to take off and persistence, however, within five years the BOP business had become a promising profit

generator for CEMEX with great growth prospects, earning 25 million USD per year (London, 2010).

In conclusion, the BOP proposition changed significantly from the first to the second generation, especially through the rise of co-creation and the idea of doing business *with* the BOP. Furthermore, while Prahalad (2002) thought of the BOP as a great opportunity for MNCs and saw the poor as mere consumers to make profit, for example with single-use sachets, most of the initiatives that found their way into scholarly literature in the decade after are started by non-profit firms or non-profit arms of corporations (Kolk et al., 2014). The role of MNCs has been de-emphasized and it has been shown that social entrepreneurs, small-scale businesses, government agencies and non-profit/non-governmental organizations work together at the BOP (Kolk et al., 2014).

Base of the Pyramid 3.0

In the book *The Base of the Pyramid 3.0: Sustainable Development through Innovation & Entrepreneurship* leading scholars around Cañeque and Hart (2015) describe the most recent developments that drive the leap from BOP 2.0 to third generation BOP strategies. The main development lies in the increasing focus of fostering partnerships and an ecosystem at the BOP that includes actors from education, MNCs, microfinance institutions, social enterprises, NGOs and government agencies, mainly in the areas of innovation and distribution.

Regarding innovation, the concept of open innovation is emphasized that was introduced in the 1990s and follow the principles that resources are to be tapped both inside and outside the organization. A patent, for example, that is owned by another company can be bought to benefit a firm's business model (Cañeque, 2015). The goal is to lower the cost for all participants and to use resources more efficiently. Several organizations offer their services openly for collaboration with examples, such as *TekScout* that engages in crowd sourcing of R&D or *RedesignMe* for community co-creation (Cañeque, 2015). Open innovation shares similarities with co-creation that is also about collaboration of different actors at the BOP and innovation from the bottom-up. However, these collaborations focused on specific projects, while open innovation fosters the universal sharing of knowledge and resources, spreading information faster and facilitating access.

This can be taken further to embed innovation in a larger innovation ecosystem, which exists for conventional companies, ranging from financing option, over executive education to consulting services. The rise of impact investing improves access to financial resources. Both corporations, such as Danone but also investment firms dedicated to make an impact like the Unitus Seed Fund or Accion Centure are engaged in this (Chevrollier and Danse, 2015). However, as described above, financing is not the only issue. A role model example of an innovation ecosystem is Emergent that was founded in 2012 with the goal to bring people together engaged in business at the BOP (Dagupta and Hart, 2015). Among other parts, it consists of an Accelerator, providing coaching and mentoring to entrepreneurs, the Emergent Cluster Network that connects entrepreneurs, financiers, corporations, government agencies and NGOs from different sectors and the Green Leap Technology bank, providing access to off-the-shelf technologies in collaboration with Cornell University (Dagupta and Hart, 2015).

The other main focus lies on solving the distribution challenge, which also will be only possible with close partnership of the actors at the BOP. This is seen in the shared channel model that has the objective of using existing distribution channels to reduce costs, carry a larger variety of products, to go deeper into rural areas and for partners to specialize in certain tasks of the

distribution (Dietrich and Tibi, 2015). MNCs have established supply chains but they lack channels that reach the BOP (Dietrich and Tibi, 2015). Therefore, they need to partner together with social enterprises, NGOs and also microfinance institutions (MFI) that have the access and expertise. MFIs can increase the financial capabilities of BOP consumers to be able to buy goods (Dietrich and Tibi, 2015). Further considerations are market access and to increase customer awareness (Dietrich and Tibi, 2015).

Another way of increasing access for BOP consumers is to increase the bandwidth of products in small stores that can offer a wide array of products from food, over clothing to banking services (Barki, 2015). Also, door-to-door delivery in different innovative forms is encouraged, e.g. boat delivery on the Amazon to communities or the *dabbawalas* in Mumbai that deliver food to business people from their homes (Barki, 2015). Finally, technology, such as mobile banking or educational applications and franchising, is a key to drive down distribution cost and ultimately prices (Barki, 2015).

Conclusion

In approximately 20 years since the Prahalad coined the term Base/Bottom of the Pyramid, knowledge about this market and how to do business with it has improved significantly, which is reflected in business strategies. BOP 1.0 strategies were still lacking sufficient interaction with the market, as companies tried to market products only with incremental changes and Western business models and consequently failed to successfully penetrate the BOP market. Furthermore, MNCs were seen as the key actors that often would act alone in a market that they were unfamiliar with.

The BOP 2.0 proposition corrected many of these shortcomings, focusing on co-creation and the collaboration of many different actors at the BOP, such as MNCs, NGOs and government agencies. Innovation from the bottom-up and development of products and services together with communities at the BOP lead to business models and innovations that were more compatible with the needs of poor consumers.

BOP 3.0 takes this approach one step further and proposes open innovation ecosystems that facilitate the transfer of knowledge and resources of cross-sectoral actors at the BOP, such as educational institutions, consulting companies and financing institutions. It also focuses on solving the distribution challenge which can alleviate the poverty penalty in two ways. First, improving the efficiency of distribution by engaging in shared distribution channels and the use of technology, prices can be driven down. Secondly, further access is not exclusively limited to commercial goods but can include education and healthcare.

| BOP Generation | Characteristics | Source |
|----------------|---|---|
| BOP 1.0 | <ul style="list-style-type: none"> Base of the Pyramid comprised of 4-5 billion people as 13 trillion USD business opportunity for MNCs Business strategies and products are mainly low-quality, low-cost versions from the West, such as single-use sachets or skin irritating detergent | Prahalad and Hart (2002); Prahalad (2005) |
| BOP 2.0 | <ul style="list-style-type: none"> Instead of “selling to the poor”, companies engage in “Co-venturing and co-creation” strategies doing business <i>with</i> the BOP, | Simanis and Hart (2008); London and Hart (2010) |

| | | |
|---------|---|---|
| | <p>developing capabilities in communities and building innovations from “the ground up”</p> <ul style="list-style-type: none"> • Role of MNCs de-emphasized: social entrepreneurs, small-scale businesses, government agencies and NGOs/NPOs work together | |
| BOP 3.0 | <ul style="list-style-type: none"> • BOP market defined as people that earn less than 8 USD per day, comprising 3.5 billion people worldwide • Increasing focus on partnerships in open innovation that encourage easy resource transfer of various actors at the BOP, such as crowd-sourcing platforms or companies engaged in community co-creation • Embedment of innovation in larger innovation ecosystem for the BOP that includes conventional companies, financing institutions, executive education, accelerators and consulting services | Cañeque (2015); Dagupta and Hart (2015) |

2.1.2 Consumption behaviour at the BOP

The consumption behaviour of BOP consumers differs significantly from “Western” consumer, and although the majority of studies of the behaviour of consumers comes from the West, there exist various studies regarding the consumption behaviour of low-income consumers (Chikweche and Fletcher, 2009; Barki and Parente, 2006; Viswanathan et al., 2010; Chikweche et al., 2012; Gupta and Srivastav, 2016;).

Research found that on one hand, non-psychological factors, such as satisfying physiological needs, the *Affordability* of a product, or the *Availability* of a product influence the consumption behaviour of low-income consumers (e.g. Chikweche and Fletcher, 2009). On the other hand, several psychological factors, such as confidence and self-esteem have an impact (e.g. London and Hart, 2010; Viswanathan et al., 2010; Barki and Parente, 2006). These factors will be discussed in this part of the knowledge review.

Non-psychological factors

Research found that the most important concern for consumers at the BOP is to satisfy their physiological needs in “the best way possible”, looking mainly at fairness, product quality and price as buying indicators (Chikweche and Fletcher, 2010). Satisfying the physiological needs has a great impact, because people below the poverty line or even above it, are largely motivated by survival, trying to cover the needs of food, shelter, clothing and transport.

Price is of high importance as well and becomes the only decision criteria in situations where low-income consumers find it difficult to assess other qualities of a product due to low market and general literacy levels. However, it was refuted that price is always the decisive factor, as scholars had thought in earlier research regarding the BOP. Rather the performance of the product weighs stronger in the buying decision, as low-income consumers are far more dependable that their few purchases work, as opposed to Western consumers (Chikweche and Fletcher, 2009). However, price and *Affordability* of a product remain a key purchasing indicator, since without it consumers at the BOP are simply not able to buy a product.

Finally, *Availability* plays a far greater role than in developed economies. In a study by Chikweche and Fletcher (2009), 93% of interviewees saw the uncertainty of product availability as a key purchase driver, with only their physiological needs and price being equally important, as products are frequently bought on the black market and product shortages being commonplace. Interestingly, in the study low-income consumers reported that satisfying physiological needs, *Availability* and price were strongly interlinked, again refuting the role of price as the unique purchase factor. *Availability* is of high importance, because even small purchases like food or shower gel that middle-income consumers buy without increased consideration become high involvement product purchases because of their budget constraints (Raman et al., 2013). Therefore, significant time and effort go into the decision of which product to buy when the commonly bought product is not available.

Covering the physiological needs with products that are available and affordable is key for consumers at the BOP. The next part analyses the psychological factors *Confidence and Self-Esteem*, *the Social Environment*, *Relationships and Word of Mouth* and *Branding at the BOP*.

Psychological factors

Confidence and Self-Esteem

Consumers at the BOP lack self-esteem, so they stay away from unfamiliar places and situations where they could be asked something that they do not know an answer to. Furthermore, they tend to not second-guess prices or the quality of a product, as they might think it is the best they can expect (Viswanathan, 2010). Low-income consumers are discouraged by their low self-

esteem to switch shops, compare prices and to seek information before shopping (Viswanathan et al., 2010).

Their limitations in income do not only have an effect on their physiological basic needs but makes them feel undesired and not part of society at all (Yurdakul et al., 2017). One example of this is the tendency that poor looking people tend to get stopped more often and mistrusted by the police, or that they feel that they cannot go to certain places without having adequate clothing. It becomes important to show that one does not belong to the “poor people” (Yurdakul et al., 2017; Barki and Parente, 2006).

Many consumers at the BOP are unaware of their rights and are not confident in their decision making, causing a feeling of mistrust towards shopkeepers. A study by Viswanathan et al. (2010) showed that mistrust varied with the level of trust towards the shopkeeper and that satisfaction correlated with being treated fairly (Viswanathan et al., 2010). Particularly, mistrust of large corporation is shown, for example, when their efforts to offer lower prices by saving on the appearance of a store is seen as not caring about the poor (Barki and Parente, 2006). Corruption, low-literacy levels and the lack of consumer protection laws further reduce the confidence of low-income consumers in the buying process (Chikweche and Fletcher, 2010).

To overcome the feeling of not belonging, low-income consumers engage in coping strategies, such as foregoing saving, incurring debt or working overtime. In extreme cases, they choose malnutrition to be able to buy an aspirational product. In one study, an adolescent in Turkey skipped lunch for weeks to be able to afford an iPhone. The debt they take on in the form of loans and credit card debt weighs heavily on low-income consumers’ well-being, as in many cases they are eventually to catch up with them (Yurdakul et al., 2017). Furthermore, to feel better about themselves they might shop in more expensive super markets or buy more expensive brands (Barki and Parente, 2006).

Social Environment, Relationships and Word of Mouth

Consumers at the BOP have been found to be strongly influenced by their social networks, as participating in them shapes their behaviour when they want to conform to the groups’ expectations and norms. Families are larger and their influence on individuals is much greater (Chikweche and Fletcher, 2010). As they often do not possess much else, their beliefs, their culture and their families are of much greater importance than for Western consumers (London and Hart, 2010). Furthermore, low-income consumers are members of informal social networks that revolve around economic and social activities, such as buying clubs to realize advantage when buying goods at bulk, savings clubs, self-help networks or religious groups (Chikweche and Fletcher, 2010). These networks help consumers to diminish the psychological imbalances resulting from their situation and to deal better with the feeling of voicelessness and powerlessness (Viswanathan et al., 2010).

As they value familiarity, they often maintain a relationship with one specific shop where the shopping act becomes a social event that involves the exchange of stories and spending longer time (Viswanathan, 2010). These relationships are important, as price and quantity are constantly customized and adjusted (Viswanathan et al., 2010). Furthermore, consumers at the BOP communicate much more intensely with each other, increasing the importance of word of mouth communication (Viswanathan, 2010). Word of mouth will be more effective in influencing the consumers’ purchasing behaviour, as people have a more collectivist life and social ties are tighter and stronger, with more direct and frequent contact of members of a social network (Chikweche and Fletcher, 2010; Rivera-Santos and Rufin, 2010). Research by Viswanathan et al. (2010) supported this, finding that groups and interactions with family and close friends were the most important information sources consulted when making purchasing decisions. Non-social sources, such as marketer-related sources, as well as TV, newspapers and radio on the other hand, were of lower importance. Mass media communication might,

therefore, not be adequate when dealing with consumers at the BOP, as the social interactions need to be taken into account and right opinion leaders in a social system have to be found (Viswanathan, 2010).

Branding at the BOP

It might be counterintuitive, since branded products are often more expensive than white label products, however, branding was found to play an important role in the purchasing decision (Prahalad, 2005). In fact, consumer data from Kantar Worldpanel showed that 31% of low-income consumers' purchases come from leading and premium brands (Barki and Parente, 2006).

To ensure the impact of branding on the BOP consumer, availability of a product is of key importance. The reason is that availability at the BOP is far from guaranteed and supply shortages often lead to a dilution of brand importance, because a product is simply not available. Although, they would prefer a branded product, they end up buying what is available at that moment (Chikweche and Fletcher, 2011). Furthermore, they tend to spend more on globally known brands because they are often not aware of lesser known brands (Gupta and Tandon, 2018). Contrary to consumers in the Western world, brands influence purchasing decisions also regarding products that are low involvement products for more affluent consumers, such as hygiene products or food because of daily price changes. The importance of branding derives from the fact that brands guarantee a certain quality standard for consumers, that need every product purchase to work (Gupta and Tandon, 2018; Rahman et al., 2013).

For a brand to induce loyalty among BOP consumers, it needs to lower their risk perception regarding a product's performance, functionality and social acceptance (Gupta and Tandon, 2018). Rahman et al. (2013) confirm this in their study that showed a correlation of brand and the attribute *Relative Advantage* which was found in numerous diffusion studies to have a strong positive impact on product adoption (e.g. Rogers, 2004). BOP consumers show extended use of branded products, to get the most value out of them. Sport shoes for example are not only used to exercise but in their everyday live (Gupta and Tandon, 2018). In some cases, BOP consumers buy branded products to improve the social status of themselves and their family and to diminish the effects arising from poverty (Gupta and Tandon, 2018). Brands of mass consumer goods serve to satisfy the aspirations of low-income consumers in a way that prestigious brands do for higher income classes (Barki and Parente, 2006). Regarding brand loyalty, research shows that rural consumers in developing countries take longer to decide for a certain brand, but once they do, they are more brand loyal than consumers in cities (Rahman et al., 2013).

In conclusion, brands play a significant role in the purchasing decision of low-income consumers, mostly through the signalling of higher quality and sometimes by appealing to the aspiration of BOP consumers for a higher social status.

Conclusion

Overall, the consumption behaviour of consumers at the BOP will differ substantially from Western consumers due to the particularity of their environment. On one hand, low-income consumers will focus strongly on the price or affordability, availability due to informal distribution networks and product shortages and quality, since the few purchases that they make need to work, always with covering their basic physiological needs as the first objective. However, these factors are more of a basic condition, since a product that is not available or affordable cannot be bought.

When this basis for a product is fulfilled, psychological aspects have a strong impact on the consumption behaviour. It is characterized by low self-esteem and the feeling of not belonging which results in mistrust towards shopkeepers and MNCs, the fixation on one specific shop and

overcompensating by trying to buy branded products that serve both as a guarantee for quality and as a way to satisfy their aspirational consumption needs. Finally, they are stronger influenced by word of mouth communication and their social networks, consisting of family members, close friends as well as numerous social and economic communities.

2.2 Innovation in and for the Base of the Pyramid

In recent years many concepts of innovations emerged that focus not initially on Western economies but emerging markets. The rising importance of innovations from these markets can be largely explained by accelerating growth in emerging economies, paralleling slowing growth in the West. Furthermore, higher demand is increasingly matched by growing supply of local resources and increasing availability of global ones (Govindarajan and Ramamurti, 2011). This session will give an overview of the concepts of *disruptive innovation*, *incremental innovation* and *reverse innovation* and discuss *frugal innovations* in greater detail as a concept and establish significant overlaps and differences of the different types of innovations.

2.2.1 Disruptive Innovation

Some of them are *disruptive innovations* which are defined as innovative technologies that are initially only successful in a niche market. The reason is that the “pace of technological progress frequently exceeds the rate of performance improvement that mainstream customers demand or can absorb” (Christensen, 1997, p. 16). They underperform initially with respect to the traits that consumers value the most, finally catching up and displacing incumbent technologies (Corsi and Di Minin, 2014). Many times technologies come from market entrants, rather than incumbents (Christensen, 1997). It can be distinguished between *low-end disruption* and *high-end disruption*. The former is of inferior performance but at a lower price, while the latter performs better on traits that differ from the ones valued by the mainstream. An example is the mobile phone which was smaller and more convenient to use, however, initially the signal was worse than that of home telephones (Corsi and Di Minin, 2014). Another important distinction is made between radicalness and disruptiveness. Radicalness refers to the change in technology which will be larger in a high-end disruption, while disruptiveness refers to the change in a market (Corsi and Di Minin, 2014).

Some concepts of disruptive innovations can be linked to the BOP market. Consumers at the BOP value innovations with traits that are different from the mainstream consumer, especially technology at lower cost (Corsi and Di Minin, 2014). The concept is able to attract consumers that are satisfied with *good enough* performance, often offering cheaper products to formerly unserved consumers (Ramdorai and Herstatt, 2017). Emerging economies pose large populations with low income levels that provide ideal breeding ground for disruptive innovations. An example that would be less relevant to most BOP consumers but has been a great success in an emerging economy comes from the Chinese company Galanz. It licensed technology from Toshiba and with a focus on R&D, design and manufacturing was able to develop a small microwave, with significantly higher affordability, reaching a market share in microwave ovens of more than 70% in 2007 (Hang et al., 2010).

Finally, an important thing to notice is that *disruptive innovations* show an overlap with *frugal innovations* and sometimes also *reverse innovation* that will be described later in this chapter. An example for this is the GE MACi, a cardiogram that was significantly cheaper, more robust and portable, making it possible to reach consumers that had not been reached before, such as rural India (Ramdorai and Herstatt, 2017). The majority of products in literature regarding disruptive innovation, however, such as the microwave example, digital cameras and Walkmans (Yu and Hang, 2010) targets upper classes.

2.2.2 Reverse Innovation

Innovation has usually been assumed to originate in the West through R&D efforts of the world leading MNCs. However, in recent years the possibility of innovations occurring in emerging markets and trickling up to developed economies has been recognized. This type of innovation is referred to as *reverse innovation* (Govindarajan and Ramarurti, 2011). Important for this definition is not necessarily where the innovation was developed, but where it was first adopted (Govindarajan and Ramarurti, 2011). One of the most popular examples is GE's MACi that was first developed *and* adopted in India and China, before reaching the West (Govindarajan and Ramarurti, 2011). However, reverse innovation are not necessarily products that have affordability as one of their core features. It is not a concept directed the BOP but rather all the population outside of the 10% on the top of the economic pyramid in emerging markets, as the top 10% of countries will be very similar, adopting innovations at similar times (Govindarajan and Euchner, 2012).

Reverse innovations are attractive for developed markets for a variety of reasons. One of them is clearly the vast reduction in the price of a product that appeals to many consumers in developed economies that are satisfied with good enough products at lower cost (Govindarajan and Ramarurti, 2011). One example comes from Harmon that developed an entertainment system, initially for the Chinese market, that turned out to have 50% of the functionality at a third of the cost. Today it is used globally, for example, in Mercedes-Benz cars (Govindarajan and Ramarurti, 2011).

However, also new functionalities that are usually required in emerging markets, such as ease of use or portability. Finally, the application and improvement of Western technologies can turn emerging economies in leaders in certain markets, leap-frogging, for example, past brick-and-mortar banking directly to a largely digitalized banking system. Another example is renewable energy where certain emerging economies are both technology and cost leader (Govindarajan and Ramarurti, 2011).

The different reasons why an innovation might trickle up show that any kind of innovation could theoretically be a reverse innovation, as it is defined solely by the direction of the adoption process from emerging economies to developed markets.

2.2.3 Incremental Innovation

Incremental innovations are improvements to existing products that “manifest as adaptations, refinements, enhancements, or line extensions, incorporating new features that offer additional benefits”, which in many cases do not require significant investment or changes for a company, such as single-use sachets of a shampoo that a company already produces (Varadarajan, 2009). It is associated with a low degree of novelty, less risky and costs less (Souto, 2015). Companies can engage in incremental innovation in product segments where they currently have a presence to enter other segments with an additional feature, such as going from B2C markets to B2B or into a new geographic market. An example for entering a new product market comes from Cheshbrough-Pond's that entered the lip care market, with Vaseline brand petroleum jelly, a product they already produced. However, since it was sold in large jars, people did not use it for their lips, because they wanted a product that was easy to carry. When the company advertised it under the new brand name Vaseline Lip Therapy in a 0.35-ounce plastic tube, it entered the market successfully (Varadarajan, 2009).

Seeing the innovation described above, the notion of incremental innovation is different from the newest principles of strategies for the BOP which we see embraced by frugal innovation.

However, while incremental changes will most likely not achieve high-quality with low-cost (Ismail, 2015), incremental innovations are able to complement other types of innovations, such as frugal innovations. Although, single-use sachets, for example, produce large amounts of plastic and are more expensive per litre, they are one possibility for many low-income consumers to solve an important need which was not possible before.

2.2.4 Frugal innovation

Research on frugal innovation is a rather recent phenomenon. The term was brought into the popular press for the first time in 2010 by the Economist⁶. Frugal innovations are presented as products that take the needs of the poor as a starting point and work backwards from there to create an innovation, stripping products down to their most essential features. Most frugal products and services are covering sectors such as healthcare, energy, food, housing, transport and water as well as information and communication, with the majority being found in India, China and throughout Africa (Rosca et al., 2017). Interestingly, the idea of frugal innovation is not new, as all societies have tried to use the resources, they had at hand to add value and create something new. The novelty comes from the fact that frugal innovation is seen as an important part of solving challenges and long withstanding problems in emerging market on a large scale (Bhatti, 2012).

The earliest journal article published on this topic is from Zeschky et al. in 2011. They emphasize the rising number of affordable and “good-enough” products that are being developed by MNCs from emerging economies and the fact that Western MNCs increasingly start developing similar products. Those products enjoy increasing demand, as more and more people in emerging markets turn from being non-consumers to being consumers. While the importance of frugal innovations increases, MNCs face the challenge that their R&D capabilities are designed to develop advanced products and their business models usually do not serve resource-constrained consumers. Adaptation is necessary to develop frugal innovations that are “the result of a unique value architecture that is grounded in the drive to meet basic requirements at the lowest possible cost” (Zeschky et al., 2011, p. 42).

Since the introduction to scholarly literature by Zeschky et al. (2011), frugal innovations have been defined in different ways with varying focuses. Weyrauch and Herstatt (2016), for example, argue that a frugal innovation is characterized by a significantly lower price achieved through substantial cost reduction, reduced complexity through a concentration on core functionalities and an optimized performance level for its purpose and the local conditions. This is a definition that focuses on the cost aspect of frugal innovations and its functionality that was optimized for the needs of its context. Frugal innovations are found to realize a cost reduction between 50% and 97%, compared to their conventional counterparts (Rosca et al., 2017). Lim and Fujimoto (2019) on the other hand, advocate that frugal innovations imply significant changes of the design and the architecture of products, its low cost and the creation of new markets. Other researches point out the resource constraints under which frugal innovations are created (Hossain et al., 2016; Zeschky et al., 2014). Table 1 gives an overview over the most commonly used definitions.

⁶ Source: <https://www.economist.com/special-report/2010/04/17/first-break-all-the-rules>. Accessed on July 19th 2019

Table 1: Most common definitions of Frugal Innovation

| Reference | Definition |
|-------------------------------------|---|
| Zeschky et al. (2014, p. 23) | “innovations specifically developed for resource-constrained customers in emerging markets...typically built on new product architectures that enable entirely new application at much lower price points than existing solutions” |
| Weyrauch and Herstatt (2016, p. 12) | “...innovations are frugal if they simultaneously meet the criteria substantial cost reduction, concentration on core functionalities and optimised performance level.” |
| Hossain et al. (2016, p. 133) | “...resource scarce solution, that is designed and implemented despite financial, technological, material or other resource constraints, whereby the final outcome is significantly cheaper than competitive offerings (if available) and is good enough to meet the basic needs of customers who would otherwise remain un(der)served” |
| Lim and Fujimoto (2019) | Frugal innovation includes changes of design, architectures, reflects a shift of the product-cost performance frontier and creates a new market |

Source: Elaborated by the author

In this research a definition will be used that includes the elements from the definitions provided in scholarly literature that are deemed most important by the author:

“A frugal innovation is a product, service or business model that significantly reduces costs at an optimal performance level to serve formerly unserved or underserved consumers.”

This definition is used, to highlight that a frugal innovation does not necessarily have to be a product but can be a service or business model as well. One example for a frugal product innovation that was described early in this chapter is General Electric’s frugal cardiogram, the MACi which simplified cardiograms used in developed countries. The functionalities were reduced to the core necessities, local products and materials were used to reduce costs and it was made portable to reach remote rural areas (Rosca et al., 2017). The product ended up being one of the most successful frugal product innovations, generating revenues of USD 278 million in 6 years and an annual growth rate of 50% (Hossain et al., 2016).

On the service side, especially financial services stand out. One example is Vortex, a robust ATM, running on solar energy which brought cash machines to rural India. There is great necessity for this, as in 2015 there were 8.9 ATMs per 100,000 people, trailing greatly behind other BRIC economies. The ATM offers access with a biometric finger print and a terminal in various languages and it dispenses soiled notes, as rural Indians are not used to clean ones (Raju, 2018). The Grammateller employs frugal principles in various ways. Running on solar energy

solves the problem of scarce electricity in the countryside. Making it more robust protects the ATM against the roughness of rural India. Furthermore, providing various local languages and access with biometry allows illiterate and less educated consumers to access the ATMs services more easily. Finally, low investment cost and operating expenses improve the business case for banks to install ATMs in remote areas (Raju, 2018).

Another example is M-PESA, a paying service, originated in Kenya, that enables users to send money via SMS and to attain small credits and savings. All of this is possible without having a bank account but only a simple mobile phone, solving the problem of less than a quarter of Africans having a bank account, compared to 80% owning a mobile phone. In 2016, total transactions had reached USD 52 billion, and the service had reached Tanzania, Egypt, Lesotho and Mozambique (Wellen and van Dijk, 2019). Using a technology that consumers can afford and cutting out banks of the service, brought payment services and credits to a much larger population than before.

Business models in the sphere of frugal innovations are characterized by lower margins and low-cost structures that source materials and manufacture locally, as well as maintain local distribution systems (Rosca et al. 2017). Because of their low margin, a frugal product or service needs to be scalable to create profit, despite the low margin (Tiwari and Herstatt, 2012). Among actors, such as NGOs, shopkeepers and local entrepreneurs, women are strongly involved in distribution which yields revenue for the sales of frugal products and services. While cost is kept low on the supply chain, more funds are put into the education of employees and consumers. Another peculiarity is the need to provide further affordability, while prices are already substantially lower than comparable products. Companies that sell frugal products or services cooperate with NGOs as well as local governments and institutions to provide micro-insurance and microcredit. Finally, affordability of the business model can be improved by different prices for different customers, offering nearly zero-prices services for the BOP by cross-subsidization. One example of this is Aravind Eye hospital that subsidizes prices for BOP consumers, by charging different prices to more affluent consumers (Rosca et. al., 2017).

This points to the second part of the definition that shows that frugal innovations need to be affordable, to serve the contexts where they are created. This consideration was also pointed out by Prahalad (2002) who remarked that at the BOP one cannot focus on the 4Ps (Price, Place, Promotion, Product) of traditional marketing literature but on 3 As: *Affordability*, *Access* and *Availability*. Anderson and Markides (2007) reiterated that claim, adding *Awareness* to form the 4 As. Affordability extends further than low cost, but also addresses how a product or service is designed to function or manufactured, but also how it is operated (Bhatti, 2012). Affordability is achieved by applying frugal principles in the design of the product, the labour involved, the materials used and the manufacturing process (Rao, 2013).

Furthermore, low-cost does not equal low quality which addresses the third part of the definition. For example, car horns in India are used more often than in Europe, so they need to be more robust to withstand that use, while many electronic components available in e.g. European cars are reduced to enable easy repairs (Weyrauch and Herstatt, 2016). Although consumers at the BOP suffer from lack of income, it is a misconception that they accept low(er) quality products that are considered poor people's products (London and Hart, 2010; Tiwari and Herstatt, 2012). Optimal performance level means that the creators of frugal innovations need to know how low-income consumers are currently meeting their needs and how an innovation can help them to do this in an optimal way. What needs have to be met and in what way will both differ significantly at the BOP from more affluent consumers (Agarwal and Brem, 2012). However, it needs to be mentioned that frugal innovations in some cases target not only low-income consumers but a wide range from BOP to the middle-class (Tiwari and Herstatt, 2012; Rosca et al., 2017). One example of that is M-PESA that was described above.

It solves not only the need for mobile payments that consumers at the BOP have, but Africans of all parts of society. Still the large majority of frugal innovations is developed with the ultimate objective to reach unserved or underserved consumers at the BOP.

The last point of the definition points at the context of these underserved or unserved consumers that are addressed with frugal innovations. They are created in places in low-income countries where consumers lack resources regarding knowledge, education and income (Winterhalter et al., 2017). Frugal innovations tackle these problems. Tata's frugal water purifier, for example, is called Swach, the Hindi word for clean, accounting for the fact that a large part of the rural population of India does not speak English. Another example is M-PESA where "pesa" means "less money" in Swahili. Applications also are translated into local languages and dialects, using easy language (Rosca et al., 2017). The Grammateller ATM uses biometric fingerprint technology and is more robust, improving durability of the product in rural India and guaranteeing easier access for illiterate consumers. GE's frugal cardiogram strips down functionalities, that are not necessary for the BOP context and adds portability to reach remote areas.

In conclusion, as the various definitions of frugal innovation show, a successful frugal innovation needs to combine affordability with quality and a performance level that addresses the needs of the BOP. This proves to have created the most successful frugal innovations (Tiwari and Herstatt, 2012). While affordability truly is the *condicio sine qua non*, when dealing with consumers at the BOP, it is only the basis. Companies that want to compete in this market must serve consumers with good quality products and services in a way that understands and meets their specific needs in an optimal way.

Table 2: Comparison of innovation concepts

| Type of innovation | Definition | Source | Examples |
|-----------------------|--|---|---|
| Frugal Innovation | "...a product, service or business model that significantly reduces costs at an optimal performance level to serve formerly unserved or underserved consumers" | Adapted from several authors (Soni and Krishnan, 2013; Zeschky et al., 2014; Weyrauch and Herstatt, 2016; Hossain et al., 2016; Lim and Fujimoto, 2019) | M-PESA (SMS payment service); GE MACi (portable cardiogram) |
| Disruptive Innovation | "...innovations for existing products but on attributes that differ from those that are mainly valued by mainstream costumers...become disruptive when they reach the same performance as the sustaining innovations on the attributes valued by mainstream consumers" | Corsi and Di Minin (2014, p. 78) | Digital cameras; Walkmans; GE MACi |
| Reverse Innovation | "Innovation that is the case where an innovation is adopted first in a poor country before being adopted in rich countries" | Govindarajan and Ramamurti (2011, p. 191) | GE MACi; Harmon car entertainment system |

| | | | |
|------------------------|---|---------------------------|--|
| Incremental Innovation | “adaptations, refinements, enhancements, or line extensions, incorporating new features that offer additional benefits” | Varadarajan (2009, p. 21) | Portable solar-charger for digital cameras and printers; one-use shampoo sachets |
|------------------------|---|---------------------------|--|

As shown throughout this chapter, there exists an overlap of products between the different types of innovations, particularly for *frugal innovations*, *disruptive innovations* and *reverse innovations*. This overlap is best illustrated with the GE MACi as an example that could be classified as either one of these types of innovations. The MACi is considered a frugal innovation because it significantly lowered the cost of a product at optimal performance for the local conditions, being significantly cheaper, more robust and portable. It was able to disrupt the market for cardiograms due to an improvement of product features that were not initially thought of as valuable by mainstream consumers, such as the robustness and portability. Finally, the innovation made its way from India and China to developed markets, classifying it as a reverse innovation (Hossain et al., 2016). This shows, that an innovation can be frugal, disruptive and a reverse innovation at the same time, always emphasizing a different aspect of the innovation.

However, there is a very critical difference between the different concepts, including incremental innovations. The MACi was developed with the intention to solve needs of consumers in conditions that have not been reached up to that point, namely rural China and India. Neither the disruption of the cardiogram market nor entering the USA and other developed markets was a main objective, emphasizing the frugal nature of the innovation. Frugal innovations are the only innovations introduced that are developed with the goal of serving formerly underserved consumers that are most commonly found at the base of the economic pyramid. Therefore, while the outcome of a development with this goal in mind can also yield to the disruption of a market or the innovation being adopted by Western consumers, it will most likely create products and services with an impact for low-income consumers at the BOP.

2.3 Diffusion of innovation

Regarding the diffusion of conventional innovations, many different concepts with rich research in scholarly literature exist. They mainly are organized in three streams: aggregate diffusion models, agent-based or individual level diffusion models and technology diffusion models.

Aggregate models discuss the diffusion of innovations on a macro level of a social system (e.g. Rogers, 2003; Bass, 2004). Most of the theory in the first research stream in the field of Marketing builds up on Bass' theory of diffusion. The Bass model of diffusion of innovation was published by Bass (1969) and, since then, has been used to predict diffusion patterns in various industries (Mahajan et al. 1990). Bass (1969) categorized adopters in two groups that he called the *Innovators* who were driven only by mass-media communication or external influence and the *Imitators* who were driven only by word of mouth communication or internal influence. That means that *Innovators* decide whether to adopt a product or not without being influenced by other members of their social systems, as opposite to *Imitators* that follow former buyers.

A more thorough and complex theory that analyses diffusion not only in Marketing but many other fields, such as Sociology, is the Diffusion of Innovation (DOI) theory by Rogers (1983). Rogers' theory provides a comprehensive picture of diffusion theory, addressing the most important variables that influence the adoption of innovations (e.g. the perceived traits of an innovations or the structure of the social system where an innovation diffuses).

The second stream follows agent-based or individual level models of diffusion of innovation (e.g. Kiesling et al., 2012; Peres et al., 2010). Agent-based models do not analyse the diffusion process on an aggregate level but on the level of the individual and should, therefore, increase the explorative insights on the diffusion process, such as the communication within social systems or the personal traits of the individual actors. An individual in a network will take decision on adoption regarding its own perceived utility or its own reservation price. It looks at factors such as the network that an innovation occurs in, the nature of communication, positive and negative word of mouth communication, an individual's utility function and an individual's reservation price, among other considerations (Kiesling et al., 2012). Agent-based models have to deal with the difficulties to map networks, collect individual-level data and track diffusion simultaneously (Peres et al., 2010). Validation is increasingly difficult, due to the use of a larger number of parameters and more degrees of freedom (Kiesling et al., 2012). Therefore, the author decided, to not conduct deeper research into agent-based diffusion models.

A third stream generates specific knowledge regarding the adoption of technology. The most important models in this stream are the *Technology Acceptance Model* by Davis (1989), the *Technology Acceptance Model 2* by Venkatesh and Davis (2000) and the *Unified Theory of Acceptance and Use of Technology* by Venkatesh et al. (2003). The three streams are not mutually exclusive, as studies of the adoption of technology could theoretically be either individual or aggregate. As innovations at the BOP are not necessarily a new technology but can be a service innovation or a business model innovation, also this research stream does not receive in-depth research by the author.

It was decided to emphasize in this study the DOI theory by Rogers (1983), because it is a theory that covers a wide range of topics regarding diffusion of innovation, from categories of adopters, over communication channels to important individuals in the diffusion process. Therefore, since its introduction by Rogers in 1983, comprehensive insights have been generated regarding its theory (e.g. Mahajan et al., 1990; Denis et al., 2002; Goldenberg et al., 2009). While it does not explicitly address peculiarities of emerging countries or the low-

income environment (Zanello et al., 2016), as a highly tested theory it serves as an excellent guidance to close the gap created by the lack of diffusion studies in the low-income market.

2.3.1.1. Diffusion of Innovations (DOI) theory by Rogers (1983)

One of the most used theory used for the diffusion of innovations, is the Diffusion of Innovation (DOI) theory of Rogers that was first published in 1983 and received various revisions, with the last one published in 2003, in his book *Diffusion of Innovations*, and serves as the foundation for many models developed thereafter.

Rogers' model has been further refined, developed and applied over the years. In 2003, when Rogers published the fifth edition of his book *Diffusion of Innovations*, around 5,000 publications on diffusion had been published (Rogers, 2004).

He defined the diffusion of innovation as the “process by which an innovation is communicated through certain channels over time among the members of a social system” (Rogers, 2003, p. 35). The definition includes the key elements of the theory which are innovations, communication channels and a social system that takes a decision on adoption or non-adoption over time.

Rogers (2003) models this process in 5 phases:

1. **Knowledge**, that occurs when an individual is exposed to the innovation's existence and gains some understanding of how it functions.
2. **Persuasion**, that occurs when an individual forms a favourable or unfavourable attitude toward the innovation.
3. **Decision**, that occurs when an individual engages in activities that lead to a choice to adopt or reject the innovation.
4. **Implementation**, that occurs when an individual puts an innovation into use.
5. **Confirmation**, that occurs when an individual seeks reinforcement of an innovation-decision already made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation.

The evidence suggests, that there exist stages in the innovation-decision process (e.g. Kohl, 1966), however, it is only very clear for the *Knowledge* and *Decision* stage (Rogers, 2003). While there is only weak evidence for the *Persuasion* stage, there is also only poor data on the distinction between implementation and confirmation (Rogers, 2003). Furthermore, most diffusion research focuses on the explanation of variance in the adoption of an innovation, rather than process research to further understanding of the process of diffusion (Rogers, 2003).

How fast the diffusion process occurs, Rogers defines as the Rate of Adoption which is “the relative speed with which an innovation is adopted by members of a social system” (Rogers, 2003, p. 37) and is usually measured as the number of individuals who adopt an innovation in a specific time frame. The steepness of the curve of the diffusion will therefore depend on the rate of adoption (Rogers, 2003). This rate is depended on (1) *Perceived Attributes of Innovations*, (2) *Type of Innovation Decision*, (3) *Communication Channels*, (4) *Nature of the Social System* and (5) *Extent of Change Agents' Promotion Efforts*. Not all of these factors have been studied well by diffusion scholars, with the Perceived Attributes of Innovations having received the most attention and are said to explain around half of the variance in the rate of adoption (Rogers, 2003). All 5 factors are listed out below.

2.3.1.1 *Perceived Attributes of innovations*

In his theory, Rogers (2003) identifies perceived attributes of innovations that influence the speed of the adoption process. Between 49 to 87 percent of the variance in the rate of adoption can be explained by the following five attributes (Rogers, 2003):

1. ***Relative Advantage***: the degree to which an innovation is perceived as being better than the idea it supersedes. The type of innovation decides upon what kind of relative advantage this would be, which can be, for example, economic or social. There is strong evidence that the perceived *Relative Advantage* of an innovation positively influences the adoption of innovation which was found to be one of the strongest predictors of the adoption rate. *Relative Advantage* is seen as a ratio of the expected benefits and the costs of adoption, including subdimensions, such as economic profitability, social prestige, saving of time and effort and low initial cost.
2. ***Compatibility***: the degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of potential adopters. The degree of *Compatibility* is impacted by factors such as the naming of the innovation, its similarity to other innovations or technologies. *Perceived Compatibility* has a positive effect on the adoption of an innovation, however, diffusion studies found it to be less impactful than the *Relative Advantage* of an innovation.
3. ***Complexity***: the degree to which an innovation is perceived as relatively difficult to understand and use. *Perceived Complexity* has a negative effect on the adoption of an innovation, however, evidence on this is not conclusive in diffusion literature (Rogers, 2003). Generally, it is regarded as less important than *Relative Advantage* and *Compatibility* but, in some cases, such as the use of home computers or other technologies that require a superior level of technical expertise, it can be.
4. ***Trialability***: the degree to which an innovation may be experimented with on a limited basis. *Perceived Trialability* has a positive effect on the adoption of an innovation. Therefore, designing an innovation in a way that it can be tested by a higher number of people, will increase its adoption rate. *Trialability* has a higher influence on innovators and early adopters, since they have no proof of the usability and quality of an innovation compared to laggards that usually adopt an innovation faster and more likely after trial.
5. ***Observability***: the degree to which the results of an innovation are visible to others. *Perceived Observability* has a positive effect on the adoption of an innovation.

These traits are similar to some of the traits that were found in Technology Acceptance Models to have an influence on the intention to use (Venkatesh and Davis, 2000; Venkatesh et al., 2003). *Result Demonstrability* is defined as the production of tangible results and can be compared to *Observability*, while *Job Relevance* is comparable to *Compatibility*. They both influence the intention to use through the variable *Perceived Usefulness* which is the degree to which a person believes that using a technology would improve her/his job performance (Marangunic and Granic, 2015). Finally, *Perceived Usefulness* shares similarities with *Relative Advantage*.

The perceived attributes of innovations (or approximations) *Relative Advantage*, *Compatibility*, *Complexity*, *Trialability* and *Observability* have been tested in numerous studies, such as the diffusion of mobile banking, as well as many other research projects, with the results largely confirming Rogers' theory, although not all diffusion studies found all innovation traits to have a significant influence on diffusion (Meyer et al., 1997; Denis et al. 2002; Rogers, 2004; Shaikh and Karjaluoto, 2015; Zolkepli and Kamarulzaman, 2015). A meta-study by Tornatzky and Klein (1982) found that *Relative Advantage*, *Compatibility*, *Complexity* were the most relevant traits for adoption.

2.3.1.2 Type of Innovation Decision

Innovations can be adopted or rejected either by an individual member of a social system or by the entire social system which can decide to adopt an innovation by a collective or an authority decision (Rogers, 2003).

These decisions range from optional decisions with individual responsibility, collective decision and authority decisions where individuals or groups have to accept the decision on adoption by an authority (Rogers, 2003).

The three types of innovation-decision are (Rogers, 2003):

1. *Optional*: decisions that are made by an individual, independently from other members of the social system. Still, the individual will be influenced by the social system but takes the decision individually. Originally, diffusion theory investigated optional innovation decisions by individuals.
2. *Collective*: decisions that are made by the whole social system collectively.
3. *Authority*: Decision is taken by influential individuals within the social system that can force other individuals to follow the decision, e.g. politicians with laws or managers in a company.

Authority decisions have the fastest adoption rate because in this case, individuals have no other choice but to adopt an innovation (Rogers, 2003). For this research the focus lies fully on optional decision, as they are the most relevant for consumer behaviour and, therefore, for this study of frugal innovations.

2.3.1.3 Communication Channels (Rogers, 2003)

In the diffusion process the innovation is communicated through the social system via either *interpersonal communication* or *mass media* that originate either *locally* or *cosmopolitan*. Interpersonal communication is a two-way exchange between two people and is necessary to change a strong held belief. *Mass media*, on the other hand, can reach a large audience rapidly and change weakly held attitudes. *Local* and *cosmopolitan* refer to where the communication is coming from. *Local communication* occurs within the social system, while *cosmopolitan communication* is interpersonal communication that enters a social system from the outside. Rogers (2003) found that *mass media* plays a more important role in the *Knowledge* stage of the diffusion process, while *interpersonal* communication is decisive in the *Persuasion* stage of diffusion. These generalizations have been conclusive for both developed and developing countries (Rogers, 2003).

2.3.1.4 Structure of the Social System and extent of change agents' promotion efforts

The social system in Rogers' (2003) model is defined as "a set of interrelated units that are engaged in joint problem solving to accomplish a common goal" (Rogers, 2003, p. 23). The structure of the social system is influencing diffusion within it.

While there is little research about how a social system influences diffusion, a consensus exists that a system's norms and rules do in some way (e.g. Rogers and Kincaid, 1981). Additionally, there are different roles within the system influencing the adoption behaviour, such as opinion leaders (who can be for or against an innovation) or change agents (Rogers, 2003).

A change agent is "an individual who influences clients' innovation decisions in a direction deemed desirable by a change agency. In most cases a change agent seeks to secure the adoption of new ideas, but he or she may also attempt to slow the diffusion process and prevent the adoption of certain innovation" (Rogers, 2003, p.366). They can be very different people, such as public health workers, teachers, sales people or consultants, among many others. Change agents try to inspire change in prospective clients by activities, such as making them aware of the necessity of a change, diagnosing their problems and creating the intent within the client to

adopt. Therefore, the change agent's success was found to have an important impact on the rate of adoption (Rogers, 2003).

The change agents are also the individuals that need to identify the right opinion leaders to convince them of an innovation, as opinion leaders significantly speed up the adoption rate, on which scholars widely agree upon (Goldenberg et al., 2009). They are found to be individuals that are higher connected and usually adopt an innovation earlier (Iyengar and Valente, 2011; Van Eck, Jager and Leeftang, 2011). Valente and Davis (1999) found that, however, they are not necessarily the first adopters of an innovation, which are often individuals that have contacts outside the social system. Therefore, the innovation needs to flow from the innovators to opinion leaders. Identifying them early on and target will therefore help the diffusion of a product.

2.3.1.5 Conclusion

In conclusion, the DOI theory is widely researched and tested. However, this is only true for developed countries (Bartels and Reinders, 2011), which offers many areas to explore established concepts and theories in the context of the BOP and developing countries (Zanello et al., 2016). The authors argue, for example, that infrastructure to move goods around are often missing to a large extent in developing countries, which is not addressed enough in Rogers' theory. However, this can be a substantial problem in the diffusion process in low income countries. Furthermore, limited financial and technological resources hamper the diffusion of innovations in a more significant way than in developed economies and, it is argued, that innovation in developing countries takes different shapes and proves to be more heterogeneous. While in general, there exists already only limited research regarding the diffusion of innovation in low-income countries, the existing research usually does not look at the consumer level but rather what policies governments can adopt, in order to foster innovation among companies, as in Zanello et al. (2016), with a study by Steenkamp and Burgess (2002) being an exception. Therefore, the need exists to further explore the consumer perspective regarding what does low-income consumer drive to adopt an innovation and how this might refute or contradict Rogers' theory.

2.4 Innovativeness

One particular important part of Rogers' theory for this research is the study of the most innovative consumers where a large gap in scholarly literature regarding the BOP was discovered. The grand majority of research regarding *Innovativeness* was conducted in Western markets, with hardly any research in emerging markets and virtually none in Asia (Kaushik and Rahman, 2014).

In the DOI Rogers defines 5 categories of adopters, depending of the point in time when they adopt an innovation, describing them along a normalized S-curve. *Innovators* make up 2.5% of the adopters and bring the innovation into a social system. *Early adopters* are 13.5% of the adopters and more embedded in the social system. They act as opinion leaders and role models for their peers. The *Early Majority* accounts for 34% of the adopters and interacts frequently with its peers, making it an important part in the diffusion process. The *Late Majority* adopts innovation after the average adopter (34% of the adopters) and is only followed by the *Laggards* that represent 16% of the adopters and are the most "traditional" members of the social system.

For developed markets Rogers (2003) generalizations have been largely confirmed and particular characteristics found between the different categories. Several studies, such as the study of Pennsylvania farm operators, households in the south of Spain and Finnish students' adoption of mobile services, show a normal distribution of individuals, resembling Roger's curve of Innovators, Early Adopters, the Early Majority, the Late Majority and Laggards (Mahajan et al., 1990; Rollins, 1993; Martinez et al., 1998; Aarmio et al., 2002; Zayim et al., 2006).

Regarding the socioeconomic characteristics of early adopters, Mahajan et al. (1990) showed that earlier adopters, among other factors, tend to have higher income and wealth as well as a better education and are more likely to be employed than later adopters. This was confirmed in other studies, such as a study of the adoption of female consumers of vitroc ceramic-hob and a dishwasher, where the probability of belonging to the first adoption categories were higher for younger women with higher income (Martinez et al., 1998). In another example Plötz et al. (2014) found that adopters of electric vehicles in Germany are of higher socio-economic status, although not necessarily younger.

2.4.1 Concept and Measurement of Innovativeness

Extensive research went into the questions of what exactly the traits of the most innovative consumers are, i.e. what makes someone an innovator compared to a Laggard and what are antecedents of *Innovativeness* (e.g. Vekatraman and Price, 1990; Goldsmith and Hofacker, 1991; Hoffman and Soye, 2010; Vandecasteele and Geuens, 2010). Rogers and Shoemaker (1971, p. 27) saw *Innovativeness* as "the degree to which an individual is relatively early in adopting new ideas than the average member of his social system." They are talking about a type of *Innovativeness* that can be seen in the adoption behaviour. This was one of the two options that were widely used to measure the *Innovativeness* of consumers, which is called *Actualized Innovativeness*, meaning that the time that an individual takes to adopt a product decides whether the individual is more or less innovative. Innovators are the first to buy a product and will influence other consumers via word of mouth communication, having a strong impact on the success or failure of a new product (Goldsmith and Newell, 1997).

Another way to measure *Innovativeness* is the number of specified new products that an individual owns at a certain point in time, with the individuals being more innovative that own more of those products (Midgley and Dowling, 1978). Both methods suffer from certain issues. Looking at the point in time at which the adoption of the product takes place, one cannot really predict what leads to the observed behaviour and findings cannot be compared across studies. With the "cross-sectional" method, or the number of certain new products that a consumer has

bought, the issues lies in which product categories to choose and which products (Goldsmith and Hofacker, 1991).

Therefore, a third, and most widely used, possibility emerged, being self-reported scales of Innovativeness of which various have been developed over time. Many of those measure *Innate Innovativeness* (II) which is seen as personality trait or personal predisposition to try and choose new products, rather than remaining with the ones they know. This comes from a need of stimulation, novelty seeking, independence toward others' communicated experience or the need for uniqueness (Roehrich, 2004). While *Innate Innovativeness* is a trait of all human beings to a certain degree, *Actualized Innovativeness* is actual innovative behaviour, i.e. the number of new products someone would buy (Kaushik and Rahman, 2014). There exist numerous scales measuring II, examples being the *Sensory and Cognitive Innovativeness* Scale by Venkatraman and Price (1990) and the *Exploratory Consumer Buying Behaviour* Scale by Baumgartner and Steenkamp (1996).

On the other hand, scales can measure *Innovativeness* for a specific product. One widely used example is the *Domain Specific Innovativeness* (DSI) scale by Goldsmith and Hofacker (1991) that assesses the *Innovativeness* for a specific product category, such as fashion or rock CDs. Other than II, DSI was found to have a clear correlation with adoption behaviour as well as with *Opinion Leadership*. Several studies exist (e.g. Goldsmith et al., 1995; Roehrich, 2004; Girardi et al., 2005) that found a link between DSI and II, however, the results regarding correlation of II and product adoption remains ambiguous and calls for further future research (Kaushik and Rahman, 2014).

For this research the *Motivated Consumer Innovativeness* (MCI) Scale of Vandecasteele and Geuens (2010) will be studied in greater detail. The rationale is that many scales can only explain a small part of the variance in buying behaviour and test only a maximum of 2 motivational constructs (Vandecasteele and Geuens, 2010). The MCI Scale, however, tests for 4 dimensions, all reflected in the *Innovativeness* literature: *Functional Innovativeness*, *Hedonic Innovativeness*, *Social Innovativeness* and *Cognitive Innovativeness*.

The scale was tested by Vandecasteele and Geuens (2010) and its predictability regarding buying intention was compared to the *Cognitive/Sensory Innovativeness* (CSI) Scale of Venkatraman & Price (1990) and the *Global Consumer Innovativeness* (GCI) scale by Tellis et al. (2009) where the scale proved to explain a significantly higher percentage of variance (Vandecasteele and Geuens, 2010).

Table 3: 20-item Motivated Consumer Innovativeness (MCI) scale

| Factor | Item |
|---------------------------|--|
| Social Innovativeness | I love to use innovations that impress others |
| | I like to own a new product that distinguishes me from others who do not own this new product |
| | I prefer to try new products with which I can present myself to my friends and neighbours |
| | I like to outdo others and I prefer to do this by buying new products which my friends do not have |
| | I deliberately buy novelties that are visible to others and which command respect from others |
| Functional Innovativeness | If a new time-saving product is launched, I will buy it right away |
| | If a new product gives me more comfort than my current product, I would not hesitate to buy it |

| | |
|--------------------------|--|
| | If an innovation is more functional, then I usually buy it |
| | If I discover a new product in a more convenient size, I am very inclined to buy it |
| | If a new product makes my work easier, then this new product is a “must” for me |
| Hedonic Innovativeness | Using novelties gives me a sense of personal enjoyment |
| | It gives me a good feeling to acquire new products |
| | Innovations make my life exciting and stimulating |
| | Acquiring an innovation makes me happier |
| | The discovery of novelties makes me playful and cheerful |
| Cognitive Innovativeness | I mostly buy those innovations that satisfy my analytical mind |
| | I find innovations that need a lot of thinking intellectually challenging and therefore I buy them instantly |
| | I often buy new products that make me think logically |
| | I often buy innovative products that challenge the strengths and weaknesses of my intellectual skills |
| | I am an intellectual thinker who buys new products, because they set my brain to work |

Source: Vandecasteele and Geuens (2010, p. 312)

Furthermore, as the scale targets more dimensions, it gives marketers more possibilities to further customize their messages to consumers, i.e. target more cognitively motivated consumers with different advertising than more socially motivated consumers (Vandecasteele and Geuens, 2010). This scale was adopted in this study. Another reason is that it is not focused on a certain product category. While it is true that many scholars agree that *Innovativeness* is domain-specific and innovators for one product might not be innovators for another product (e.g. Goldsmith and Hofacker, 1991), however, difficulties would arise to identify the right product category for the low-income population that will be surveyed. Therefore, it is sensible to use an innovativeness scale that does not discriminate for products, tests different forms of motivation and possesses high validity.

2.4.2 Correlates of Innovativeness

Innovative consumers differ from less innovative ones in a number of ways with researches studying correlates of a wide range of demographics studied, finding that innovators tend to have higher levels of income and education and are usually younger and employed (Bayus and Mason, 2003).

Furthermore, psychographics have been studied extensively, one being *Opinion Leadership*. Research suggests that innovative consumers are also the ones that are more vocal about their opinions and that their opinion is more sought after by friends (Grewal et al., 2000). In general, the correlation of *Opinion Leadership* and *Innovativeness* is well established, although scholars are not entirely clear in which direction the influence works, i.e. whether *Opinion Leadership* causes *Innovativeness*, or the other way around (Hoffman and Soyeze, 2010). Meta studies by Kaushik and Rahman (2014), as well as Bartek and Reinders (2011), found several studies that confirm the correlation between DSI and *Opinion Leadership*.

Another correlate with *Innovativeness* is *Price Sensitivity*, which indicates that innovative consumer are less price sensitive, which was confirmed by Goldsmith (1996) and Goldsmith and Newell (1997) for fashion innovativeness and *Price Sensitivity* regarding clothing, which can be seen as a support for a price skimming strategy, starting with a higher price for innovators and gradually reducing it, to attract a higher number of consumers. There remain open questions, why this is the case, with one explanation being that a higher interest and involvement with the product is leading to higher demand, even though a high price has to be paid (Goldsmith and Newell, 1997). Goldsmith et al. (2005) repeated a study with the same scale with consumers in Korea, again finding a negative correlation between fashion innovativeness and fashion related *Price Sensitivity*. The correlation between *Price Sensitivity* and *Innovativeness* was also found in another study by Ramirez and Goldsmith (2009), which further established that *Price Sensitivity* is negatively correlated to brand loyalty, and found a correlation between *Involvement* and *Innovativeness*. They explain that through higher involvement consumers get better at seeing the differences between brands, become more loyal and less price-sensitive. None of the studies was conducted with low-income consumers or consumers at the BOP. This would give additional insights, since through their lower disposable income also the most innovative consumers among them might still be price-sensitive. Furthermore, the cited studies did not seek to establish a link between *Innate Innovativeness* and *Price Sensitivity*.

Innovativeness is found to be negatively correlated to *Susceptibility to Interpersonal Influence*, which can come either from *Normative Influence* whether a person tends to confirm to the expectation of group members and *Informational Influence* whether a person tends to use the information he/she gets from other people (Clark and Goldsmith, 2006). However, a study by Clark and Goldsmith (2006) only found *Susceptibility to Normative Influence* to be negatively correlated with *Innovativeness*. This is explained in the study that innovators might be individuals that are more information seeking, making them therefore more susceptible to informational influence, while they at the same time are not afraid of taking the risk to adopt new innovations before other members of their group. Midgley and Dowling (1978) on the other hand, conceptualized a scale for *Consumer Independent Judgement Making* (CIJM), which defines how much a person relies on information or assistance from others before adopting a product, being positively correlated with adoption. Manning et al. (1997) found CIJM to be positively correlated with product trial but only reflects the *Informational Influence*, not accounting what effect *Normative Influence* might have. *Social Identity* plays also an important role. Consumers that see it as important to be seen with the newest products by others, tend to be also more innovative in their adoption behaviour (Grewal et al., 2000).

2.5 Conclusion knowledge review

In conclusion, the knowledge review introduced the BOP proposition that changed significantly over time. While BOP proposition of the first generation saw low-income consumers as a 13 trillion USD opportunity for private enterprises that could even alleviate poverty when doing business in this market (Prahalad, 2005), strategies of the second and third generation advocate co-creation strategies and embedding business in BOP eco-systems as well as proposing a more realistic size of the BOP market (London and Hart, 2010; Cañeque, 2015).

Furthermore, peculiarities regarding the non-psychological and psychological factors that impact the consumption behaviour of low-income consumers were pointed out. On one hand, the basis of *Affordability* and *Availability* of a product has to be ensured and is of more important consideration for the low-income market due to the small budget of consumers and issues, such as product shortages or non-established distribution channels (e.g. Chikweche and Fletcher, 2009; Raman et al., 2013). On the other hand, psychological factors, such as *Low*

Confidence and *Self-esteem* or a higher importance of *social relationships* and *word of mouth*, influence consumption behaviour significantly (e.g. Viswanathan et al., 2010; Yurdakul et al., 2017).

In the next section, the concepts of *disruptive innovation*, *reverse innovation*, *incremental innovation* and *frugal innovation* were described as 4 types of innovation that have an impact in the BOP market. Of these concepts, *frugal innovation* was pointed out as the innovation that is directed specifically at low-income consumers and is, therefore, the most likely to have a positive impact at the BOP. Frugal innovation was identified as the only concept that is aiming directly to serve disregarded consumer and was defined as “a product, service or business mode that significantly reduces costs at an optimal performance level to serve formerly unserved or underserved consumers”.

Furthermore, the Diffusion of Innovation (DOI) theory by Rogers (1983) was introduced. It defines diffusion as “the process by which an innovation is communicated through certain channels over time among the members of a social system” and defines various factors, that influence the adoption of innovations. An innovation has a higher chance of adoption if it is perceived to have a *Relative Advantage* over another product, be *compatible* with the way of life consumers have and low *Complexity*. Other factors are the effort of change agents and opinion leaders that has a positive effect on adoption.

In the last section it was analysed what Innovativeness means and how to measure the Innovativeness of a consumer. For this research the Motivated Consumer Innovativeness by Vandecasteele and Geuens (2010) was chosen that comprises the dimensions *Social Innovativeness*, *Functional Innovativeness*, *Hedonic Innovativeness* and *Cognitive Innovativeness*. Also, it was established that innovative consumers tend to have a higher socio-economic status and a better education than less innovative consumers (Mahajan et al., 1990). Finally, Innovativeness correlates positively with *opinion leadership* and *Consumer Independent Decision Making* and negatively with *Price Sensitivity* and *Susceptibility to Interpersonal Influence*.

3 Study 1: Exploratory interviews with executives of frugal innovation companies

3.1 Methodology

The objective of this study was to give a better insight on adoption and diffusion of innovations of low-income consumers through the view of marketers of frugal innovations. It was decided to use an exploratory and qualitative approach with open-ended interview questions for several reasons. Firstly, while different models of product adoption and innovation have been tested in Western economies and for more affluent consumers, research regarding low-income consumers' adoption behaviours is rare (Bartels and Reinders, 2011). This is all the more true for frugal innovations that are per se a rather recent topic in scholarly literature and have received virtually no adoption and diffusion studies (Hossain et al., 2016). There are numerous factors that influence the diffusion process of innovations and without rich research to draw from, the author decided that it was important to gain a more in-depth understanding of the decisive factors in the adoption and diffusion processes among low-income consumers, before starting to test certain hypothesis in a more focused and quantitative manner.

A second reason was the missing access to quantitative data. The adoption of innovation is analysed most often through past sales data to explore topics, such as the speed of diffusion or the characteristics of early adopters (e.g. Van den Bulte and Stremersch, 2004). In general, it is more difficult to access data regarding low-income consumers, as many of them both work and shop in the informal economy (e.g. Chikweche and Fletcher, 2010). This was also the case for this research, gearing the study towards professionals.

Moreover, engaging in exploratory interviews with professionals has significant advantages. One of them is that one is able to gain comprehensive insight into different geographies and industries. Especially, looking at adoption behaviour at the BOP, this is important, as regions differ substantially from each other. Among others, the division between rurality and urban regions is striking. While in India 66% and in Kenya 73% of the population live in rural areas, it is 20% in Mexico and 13% in Brazil.⁷ Also, there are large differences in income at the BOP that translate into distinctive adoption and diffusion patterns. Consumers that live below the poverty line of 1.90 USD per day will unlikely show aspirational tendencies, as their consumption behaviours are characterized by the battle for survival. This might not be the case for consumers that earn 6 or 8 USD but still belong to the BOP.

The author chose to interview professionals that engaged in a significant way with frugal innovations, for example, as the CEO of a company or a commercial manager, because frugal products and services are most likely to have a significant impact at the BOP. Therefore, a better understanding of the adoption and diffusion of this type of innovation has the potential of having an impact on the access of low-income consumers to products of high quality at an affordable cost.

The interview questions were drawn up to follow the topics covered in Rogers' DOI (Appendix A): *stages of the diffusion process, the role of the social network, categories of adopters, communication channels, change agents and perceived traits of an innovation*. Additionally, questions were asked about frugal innovations and the characteristics of low-income consumers. The objective was to contextualize qualitative insights of the interviewees regarding the diffusion of innovations in the area of frugal innovation and low-income consumers. Although, open-ended questions existed, the author followed the natural flow of interviewees, emphasizing different aspects of the topics studied.

⁷ Source: <https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS> Accessed on October 28th 2019

The interviewees were found through cold acquisition on LinkedIn that was preceded by research which companies had launched frugal innovations in the past. The goal was to interview professionals that work on the consumer side of a product or service, i.e. commercial or marketing executives, or that have a significant strategic insight, such as CEOs. Also, the interviewees would be sought to represent various regions and industries to ensure to create comprehensive qualitative insights of the diffusion process of frugal innovations in the low-income context. The cold acquisition yielded a convenience sample of a total of 10 interviews that are listed in the table below. The interviews were conducted over Skype and WhatsApp in June, July and August 2019 with an average length of 43 minutes.

Table 4: Interviews Frugal Innovation Professionals

| Name | Interviewee position | Company | Innovation | Geography ⁸ |
|---------------|--|-----------------------------------|---|------------------------|
| Respondent 1 | General Manager – Sales | Healthcare equipment manufacturer | Frugal cardiogram | India |
| Respondent 2 | CEO | Healthcare equipment manufacturer | Intelligent diagnosis device | Mexico |
| Respondent 3 | Founder & CEO | Machine manufacturer | Production process that reduces cost of high-quality sanitary napkins | India |
| Respondent 4 | CEO | Engineering | ATM | India |
| Respondent 5 | Executive Director | Sanitation Services | Sanitation system with integrated waste solution | India |
| Respondent 6 | Group Senior Manager Commercial | Financial Services | Payment and savings applications | UK |
| Respondent 7 | Senior Scientist Health Informatics | Electronics manufacturer | Respiration monitor | Kenya |
| Respondent 8 | Head of Business Development and Marketing | Financial Services | Payment and savings applications | Tanzania |
| Respondent 9 | CEO | Healthcare services | Telemedicine | USA |
| Respondent 10 | CEO | Consumer Goods | Slow cooker | South Africa |

Two insights are immediately drawn from the geographies and the industries that interviewees operate in. Except for one innovation, all interviewees work in the fields of healthcare (plus sanitation) and financial services. This is not a coincidence but derives from the fact that low-income consumers need to cover their most basic needs and largely cannot engage in aspirational consumption. While it is true, that energy, transport and food are also of high importance in the low-income sphere, a large percentage of frugal innovation tries to solve issues regarding the access to and affordability of health care and sanitary services. Another large percentage covers financial services, as they increase the affordability of products in general and are thereby an important factor in the diffusion and adoption of products. The second insight is that the interviewees mainly operate in Africa and India. Also, the interviewees based in the USA and the United Kingdom cover mainly these two markets. One reason is the strong culture of jugaad innovation in India (Birtchnell, 2011). Secondly, when looking at the BOP, India is the BOP marketplace with the most consumers and with Nigeria and South Africa

⁸ Country where professional is based

two African countries are found in the top 5 that is completed by China and Indonesia.⁹ Also, they are probably the most rural places, with low access to certain services, such as healthcare or education, further increasing the attractiveness of frugal innovation in these areas.

For the analysis of the interviews, the author used elements of thematic analysis. Thematic analysis is used to identify patterns or topics in qualitative data (Braun and Clark, 2006). The author transcribed the interviews and read them multiple times to identify key topics among the interviews. Furthermore, the author analysed whether the identified topics fit the overall interview data. The author, then, refined and clearly defined the topics and produced a report of the interview data using quotes and examples from the transcripts.

In the following part of this research, the main topics and insights of the interviews will be discussed.

3.2 Discussion of results

The results will be structured into three different areas: Characteristics of the low-income consumer, frugal innovation and diffusion of innovation.

3.2.1 Characteristics of the low-income consumer

3.2.1.1 Consumption behaviour

The interviews confirmed many of the consumption characteristics of low-income consumers discussed in the knowledge review. The consumer is trying to meet his/her very basic needs, which will revolve around food, shelter, clothing and transport. Even within these categories, they would cover the necessities with the simplest means possible. Furthermore, it was confirmed that consumers tend to have lower education and awareness of certain issues which needs to be addressed when dealing with them. One example comes from Saral Designs, a company that developed a frugal technology to reduce the cost of high-quality sanitary napkins. Consumers were used to wash and reuse pads and complained that blood would remain still in the pad after washing, which would be essentially a good thing, as absorbency is of highest importance for sanitary pads. Another example is, regarding healthcare, that consumers are largely not aware of affordable insurance and treatment, or what documentation they would need to receive it. Also, respondents agreed that despite the difficulties at the BOP low-income consumers have a lot of pride. They want good quality products and want to pay for them themselves with their hard-earned money. One example comes from Wonderbag, a manufacturer and seller of slow cookers, that experiences a usage rate of 97% of her products when bought, compared to only 52% when given away for free. This was also emphasized regarding marketing effort, were respondents agreed that products must not be marketed as products for the poor.

“...people that are in more vulnerable situations are very discerning consumers, they know exactly what they need. They have very few belongings and the belongings they do have, they need to work...nothing is free because that is a very disempowering model, the moment the consumer pays for something and understands it, it becomes empowering”

Respondent 10 – CEO and Founder, Consumer Goods

One finding of the study that is not discussed very explicitly in scholarly research is the lack of long-term orientation of low-income consumers. On one hand, this is seen regarding financial

⁹ Source: <https://blog.euromonitor.com/top-5-bottom-pyramid-markets-diverse-spending-patterns-future-potential/> Accessed on November 14th 2019

products. A respondent from a financial services application stated that consumers tend to be less interested in products that give them a long-term benefit, such as savings applications. Because of this, the company emphasizes the short-term benefits, even when promoting this type of products. A group savings application for example, would be marketed as a product that brings the consumers closer together and strengthens the community, rather than pointing out the long-term benefits of saving up money for when you grow older. Additionally, this is seen very strongly in healthcare where 3 respondents described the lack of preventive care and the tendency to seek care as late as possible. A reason for this is that many low-income consumers work wage jobs and seeking care involves significant time of travelling, often with the whole family, doing check-ups and various follow-ups.

“Imagine if you live literally pay-check by pay-check or hour by hour and thinking about taking a whole day off and not knowing how much it would cost when you see a doctor and how many follow-ups there will be”

Respondent 9 – CEO and Founder, Healthcare services

As early adopters of new products tend to be more affluent consumers (Mahajan et al., 1990), one could have the assumption that low-income consumers in general are more conservative. Respondents do not confirm the assumption that low-income consumers are less innovative per se, however, they agree that the lack of money leads to more cautious and conservative buying behaviour. Several respondents emphasized that they sometimes cannot even meet the basic necessities of life, leaving basically no income for discretionary spending. Respondents also said that being poor can mean very different things. People below the poverty line are in a very dire situation and would probably not be aspirational at all, as they are battling for survival, while this might be different for consumer above the poverty line. This raises the hypothesis that also within the spectrum of low-income consumers the consumers that have some income for discretionary spending would be the least conservative. This was explicitly raised by one respondent that assumed that young people that start working are most likely to show innovative buying behaviour.

Finally, respondents described a transition to a more digital consumer in the low-income sphere. It would be a wrong assessment to think that poor consumers would not use social media and other digital technologies. While 5 years ago, few people in Mexico, for example, had access to the internet, this has changed dramatically, and especially young people buy smartphones with the little income they have and connect on WhatsApp and Instagram. That opens a big gap of marketing on social media channels to the poor, which has not been used for communication so far. Also, low-income consumers are described as rather tech savvy. Mobile products are likely to be successful due to the high penetration of mobile phones, making digital solutions and applications gaining faster traction and diffusing faster than tangible products. However, due to the relative novelty of the transition, it is still unclear what this transition will bring.

“You think that low-income consumers live far off, but they have a smartphone in their hands. If you live far off, you live in the countryside, you still have digital access of some kind. What unites us is digital media, poor and rich...I think we still do not know so much about the low-income market, especially because it is becoming digitalized. That could be interesting and nobody knows how that works”

Respondent 2 – CEO, Healthcare equipment manufacturer

3.2.1.2 Rural Areas vs. Urban Centres

Another point that was raised by several respondents was the difference between consumers in rural areas and urban centres regarding some of the factors influencing consumption behaviour. When looking into African consumers, for example, communities in rural areas have a strong tribal component where elders and the chief of the community are important individuals that influence consumers. This will not be the case in cities where consumers tend to be more progressive. Availability of products, which is often discussed as a decisive factor in the consumption behaviour of low-income consumers (e.g. Chiweche and Fletcher, 2010), was not a significant problem for a respondent from Mexico, a more urbanised country, as it was described by respondents from India and Africa. In the interview with Healthcubed Mexico, a company selling a frugal diagnosis device, camp-ins and activation events were described as a thing of the past, and they also did not see accessibility to products of key importance, as malls are popping up, even in poorer areas, while most other interviewees emphasized that distribution and access to products was far from guaranteed.

This is also reflected in the communication channels. In urban centres companies use social media and billboards much more to communicate with consumers, or local radio channels. In rural areas, on the other hand, companies would rely more strongly on word of mouth and activation events where consumers can see a product, try it and ask questions. One respondent of a fintech company described camp-ins in rural communities that resemble political rallies. A multi-national healthcare equipment manufacturer emphasizes a more important distinction between rural consumers and urban consumers, rather than between poor and rich. While poorer consumers tend to be more conservative, this is all the more true for the rural consumers, poor or rich.

“There is also that conservative element, and more so in the poorer sections. I think the divide would be more rural vs. urban, than poor vs. rich. You have very affluent people that have still backward beliefs. They would still be more conservative.”

Respondent 1 – General Manager Sales, Healthcare equipment manufacturer

3.2.1.3 Brands in the low-income market

Regarding brands, respondents confirmed that brands are also important for low-income consumers (e.g. Barki and Parente, 2006). Also, it was stated that this would be the case for brands of hygiene products of food, which are low-involvement products, with Unilever being mentioned in several interviews. Furthermore, as from the review of scholarly literature predicted, brands signal a certain quality of a product. Regarding frugal innovations, a brand needs to send the message that a product has the same quality as it would have for wealthy consumers. Another trait of a product that brands signal to low-income consumers is availability. Consumers trust that Unilever products will be constantly available in shops, which is an important consideration for consumers to adopt a product for the first time.

Although low-income consumers have limited resources, brands improve the uptake of products, at least when a certain level of income is reached, improving the trustworthiness of a product of service. However, around the poverty line, brands matter significantly less, as long as consumers get a product that is better than what they have at the moment.

“A brand is important because of the quality and availability of the product when you need it next time. For instance, the FCMGs, like Unilever, and the local businesses, like Azam, they allow to build this confidence. This is a product that is available, that can be sustained”

3.2.2 Frugal innovation for the poor

Scholars argue that frugal innovation is an important development to alleviate some aspects of poverty for low-income consumers, developing solutions mainly innovations in the sectors of healthcare, energy, food, housing, transport and water as well as information and communication (Rosca et al., 2017). The importance of frugal innovation resonates very much with the interviewees. A frugal bio-tech brings diagnosis devices, that run on a battery, are portable and connectable via Bluetooth, to rural areas in Mexico. Fintech innovations bring payment and money transfer capabilities to the unbanked in the whole of Africa or give consumers the opportunity to finance a new pair of shoes. This is great and can improve significantly the life of many low-income consumers. However, this might still not be the case for the poorest consumers around the poverty line. Their consumption revolves around the survival and will not involve much more than food, shelter, transport and clothing. In these fields, however, very little innovation is seen by the respondents. If there are innovations in these fields, they often do not apply to the poorest communities. In India, for example, there would be local frugal innovations of people using old parts of motorcycles to build tricycles that offer rides for a fraction of the price of Uber. This would still be too expensive for low-income consumers that would instead wait for hours to use an overcrowded bus. Regarding food, there would only be subsidized restaurant tickets although those as well cater to low middle-income people. This resonates very much with the critique of Karnani (2007) that the poor spend 80% of their income on food, clothing and fuel and therefore have hardly any money left to spend on aspirational products outside these categories. It therefore depends on the definition of the BOP whether frugal innovation would apply to low-income consumers. For people around the poverty line of 1.90 USD this would not be the case, while it does for consumers around the threshold of the BOP of 10 USD¹⁰.

One possible solution to reach the poorer consumers at the BOP could be models with NGOs or the government as intermediaries. Healthcubed, for example, sells its diagnosis device to pharmacies and NGOs that then offer the service to people in poor areas. Clickmedix also collaborates successfully with organizations that already have a big outreach to a community to provide its telemedicine services. While these are great innovations that improve the life of many low-income consumers, they do not cover their basic needs. The areas of food, shelter, clothing and transport need to follow.

“Serving the low-income group requires frugal innovation because it reduces the cost and makes a product or service available to them...but I am not aware of innovations for the lowest income group. If an innovation caters to their basic needs of food, shelter and clothing, then yes. However, except for the example I have given with food, that is also more for low middle-income consumers, I have no innovation in the other two spheres.”

Respondent 4 – CEO, Engineering

3.2.3 Diffusion of innovations

3.2.3.1 Important traits of (frugal) innovations in the low-income market

In the knowledge review it was shown that the innovation traits of *Relative Advantage*, *Compatibility*, *Trialability*, *Observability* and *Complexity* influence the adoption speed of an innovation (e.g. Denis et al. 2002; Rogers, 2004). The former four positively, the latter

¹⁰ Source: <https://www.inclusivebusiness.net/ib-voices/base-pyramid-mexico-insights-idb-base-forum-2015>
Accessed October 22nd 2019

negatively, with *Relative Advantage*, *Compatibility* and *Complexity* being found the most important traits (Tornatzky and Klein, 1982). For products in the low-income sphere, Prahalad (2002) and Markides (2007) added *Affordability*, *Access*, *Availability* and *Awareness* as important factors when doing business with the BOP. The respondents largely agreed on this, mentioning all of the traits, while adding some particular factors that need to be considered when working with low-income consumers and with frugal innovations.

The benefit and features, i.e. the *Relative Advantage* of a product has to be displayed in an understandable way. A frugal telemedicine company stated that the advantage of the product has to be very clear, while another respondent mentioned that it is decisive to show what advantage a new product has compared to what was there before. Also, a fintech solution was marketed, as being more secure, private and instant. *Compatibility* was emphasized in the context of culture. The Wonderbag slow cooker still requires bringing food to boil at the beginning, before using it, keeping the culturally relevant element of fire and not requiring people to change their way of cooking. Solar solutions are another example that require a larger change in behaviour and, therefore, are not being successful. *Trialability* and *Observability* is seen as important, with many examples where this is executed. Wonderbag leaves bags in communities for trial and organize so called Wonderfeasts, large activation events with up to a 1,000 people, giving people the opportunity to see the product and try it out, which significantly improves uptake. *Complexity*, respondents agreed, was slowing the adoption of a product, however, simplicity of products and services was commonplace, something that companies engaging with low-income communities know and execute accordingly.

“We have to explain the advantages of the product that has been developed through frugal innovation over a conventional product and how it is more cost-effective. It is both, because it has to be within their budget. It has to be within their affordability”

Respondent 5 – Executive Director, Sanitation services

Access and *Availability* are still an issue in low-income markets but not to the same extent in all of them and it would depend on the innovation. In Mexico malls are reaching poor communities, and due to high urbanization, consumers are able to access new products more easily than before. In Africa and India the case is different: Consumers choose certain brands because of their higher availability and the population is much more rural with less established distribution channels. That explains the success of mobile solutions that is driven by the high penetration of mobile phones that overcome the distribution issue. In healthcare, mobile healthcare applications and telemedicine have been very successful, as well as digital financial services applications.

“Mobile phones have given a lot of access. So, when it comes to digital solutions that are simple to use, especially where you have easy connectivity, when they are affordable.”

Respondent 7 – Senior Scientist Health Informatics, Electronics manufacturer

Awareness was mentioned specifically regarding healthcare products. Low-income consumers often do not know that affordable healthcare options exist and are unaware of the benefits of preventive care. Respondent 9, for example, has been successful in filling this gap and engaging with consumers at activation events where they can do check-ups and get information regarding available insurance and care options, as well as preventive care.

“There is a bit of a lack of knowledge of what options they have. They think that they do not have insurance or that it costs thousands of dollars to seek care and that is usually not the case”

Respondent 9 – CEO and Founder, Healthcare services

Finally, *Affordability* is a basic condition for adoption for low-income consumers. While frugal innovation already implies a significant cost reduction to make products affordable for a greater part of the population, virtually all respondents mention ways of their companies or others that go further than this price or cost reduction. For example, product bundles with household essentials, such as soaps or shampoo, improve the overall price. Also, the success of frugal telemedicine is connected to cost reductions that go further than the cost of healthcare itself. It prevents families from travels from remote areas to care centres where they need to pay for accommodation, transport and food. Vendors of solar panels, for instance, would bundle with financial innovations to give people the possibility to buy them. Respondent 3 from a machine manufacturer cooperate with banks to ensure that small enterprises buying their machines to manufacture sanitary napkins can afford them. In healthcare, companies connect consumers to and make them aware of cheap insurance options.

“Even when you see people that provide energy or solar power to the low-income people, they still innovate, yes, their solar panel, but a lot also in fin tech, in terms of how do they get low-income people actually pay for their services”

Respondent 8 – Head of Business Development and Marketing, Financial services

A final particular consideration that is already of higher importance for low-income consumers and even more so for many frugal innovations, is reliability of a product. Low-income consumers need products to be reliable and robust, as they have very little income and need their purchases to work. This is exacerbated, however, for the type of frugal innovations that are a lower cost version of a product that already exists. Examples for this are the Tata Nano, the Grammateller and the Tata Swach. Cars, ATMs and water filters have existed prior to their frugal counterparts and are not a novelty by itself. Therefore, consumers are less patient with certain shortcomings at the beginning, as it was the case with the Tata Nano. Some Nanos exploded which immediately raised serious questions about the safety of the car and production shortages lead to long waiting times for early orders.¹¹ Also, the positioning of being the cheapest car in the world was putting off low-income Indians that were “stretching their budgets when making a purchase just so they do not have to say that they have the Nano”.¹² The opposite example would be the payment M-PESA that offered a service that was simply not available before but solved the need of people in an unprecedented way. In general, aspirational product innovations will be adopted much slower. Products that address basic human needs or solve an important issue for low-income consumers are much more likely to be successful.

“Nano Car was a complete re-think of the design of a car, it was a matter of a generational change in the way you perceive things. If you compare it to an existing design, it will be completely different, but it will not be completely new to the market, like the first car, that was manufactured by Ford. When that came out, it had problems and the company would solve

¹¹ Source: <https://www.economist.com/business/2011/08/20/stuck-in-low-gear> Accessed October 23rd 2019

¹² Source: <https://www.businessinsider.com/tata-nano-failure-2011-12?IR=T> Accessed October 23rd 2019

them over time. Unfortunately, when we build a frugal innovative product, we do not get the benefit of time like those early cars”

Respondent 4 – CEO, Engineering

3.2.3.2 Product launch and promotion

In the product launch and promotion, most respondents mentioned activation events in rural areas that involve direct communication and an element of touch. Furthermore, the importance of co-creation and developing a product from the bottom up, together with the community and respecting its norms in the launch is decisive, as was pointed out in the literature (e.g. Simanis and Hart, 2008). Wonderbag, for example, introduces its product to elders in a community and if it is accepted, they leave some for trial for the most important women within a community. If they like the Wonderbag, a Wonderfeast is celebrated with up to 5,000 people where the product can be seen. This is seen as a great success factor for the organization. The prediction from the knowledge review that traditional marketing in television or the internet is less important to low-income consumers was confirmed, as respondents agreed that it is less likely to generate a successful product launch (e.g. Viswanathan et al., 2010).

Two further differences to conventional product launches were pointed out. First, there often exists an educational process or an element of training to increase the probability of a successful launch. A vendor of frugal telemedicine solutions proposed a service to healthcare organizations that have worked with a door-to-door approach and paper-based tracking tool. Training their employees and make them understand the product is important to launch it successfully. A manufacturer of machines to produce sanitary napkins established a door-to-door distribution network that involves a strong element of education. Sales people explain their sanitary napkins to consumers that often have not seen such a product before.

Finally, ongoing engagement with the consumer and promotion is of higher importance. A respondent from a fintech describes that for a savings app, constant reminders to save money by text messages is key. Also, ongoing promotion is particularly important in the first 6 months after the product launch and it would be different to a more upmarket product, like a virtual payment card, that is advertised on TV, social media and google ads for a shorter amount of time.

“A lot of people do not keep continuously watching TV in the space that we operate in. We created a sales and marketing channel that is a door-to-door distribution network, where low-income communities are trained to sell the product...because the consumer has never interacted with the product before, so it has to be a very personal sort of marketing.”

Respondent 3 – CEO and Founder, Machine manufacturer

3.2.3.3 Communication channels

As mentioned above and in the knowledge review, word of mouth remains a main communication channel when dealing with low-income consumers (e.g. London and Hart, 2010). One reason for that are the close ties of low-income communities. They trust and rely on each other. The exchange of information about product experiences is much more frequent which makes news travel fast. This is particularly true for bad word of mouth that has usually an even stronger impact which was mentioned by two respondents.

Another very important reason is that often low-income consumers have only limited access to other sources of information. More affluent consumers would not trust the word of a single

friend or family member but would research a product online and inform themselves in shops. It is not unusual for low-income consumers to solely rely on a person he/she knows. This, however, is starting to change. Particularly younger consumers increasingly seek and have access to social media and the internet to check on product experiences. The difference becomes more a division between young and old, rather than poor and rich consumers. Still, this is in transition and there is still little online communication with low-income consumers. It would be largely direct, as described in activation events or collaboration with organizations, such as village councils or local NGOs. Furthermore, local radio channels were mentioned by many respondents, as a great way to communicate, while television is used a lot less.

“We rely mostly on word of mouth and we have a small brochure that we hand out to the communities...For every product that has a social impact in nature, or it is to reach the low-income families, channels of communication, such as social media or TV, they might not work. We believe they may not be effective. It is the direct approach that we feel works much better”

“But what happens with low-income families, they tend to stay closer, so you have these informal settlements and the word passes very quickly. It is what you have in those villages....so if a product does not function well, through word of mouth the word spreads faster”

Respondent 5 – Executive Director, Sanitation services

3.2.3.4 Important individuals in the communities

In the DOI theory important individuals exist that have an influence on the adoption of innovations, such as change agents or opinion leader. Respondents identified several types of these individuals that are mentioned in the knowledge review. Rogers (2003) mentions the example of health care workers that is strongly emphasized by respondents from the healthcare sector. Those are usually individuals from the community that are trained by the government to provide treatment but do not have a former education as a healthcare professional. In India the government introduced one of these workers in most villages. That is a great difference to innovations in a more up-market sphere where this role would be fulfilled by doctors and nurses.

Due to tribal structures in rural communities in Africa, there exists a hierarchical component regarding the adoption of innovation. The chief of the community or the elders have a strong influence. Convincing them, gives a greater chance to a new product. Scholars also agree that convincing the opinion leaders significantly speeds up the adoption rate (Goldenberg et al., 2009). Valente and Davis (1999) found that opinion leaders are often individuals with contact outside the social system, which resonates with the statement of one respondent that said that people in rural areas that have spent more time in urban centres are important for the decision making. Other important individuals mentioned were shop owners, as they take to the distribution of goods, social workers and community members that are involved in government programs.

“The elders have a very big influence on the communities. There would be a group of elders that are voted and then also it is very tribal, so your chiefs, the people who are the head of the community where you will visit first and you will introduce your innovation to them.”

Respondent 10 – CEO and Founder, Consumer goods

Finally, social media influencers can influence low-income consumers in a very similar way, as they do it for more affluent consumers, although it will be different influencers for each group. One example is Yuya, a blogger from Mexico that has her brand of low-cost drugs that are sold in pharmacies among other things. Mexico seemed more advanced regarding this, as influencers were only mentioned by one respondent. However, this is likely to become more important, as also Indian and African consumers move further on the transition to a more digital consumer.

“I think in the low-income market, like in the up-market, in the semi-digital world, there are influencers, so looking for influencers is very important. The influencers in low-income markets will be completely different”

Respondent 2 – CEO, Healthcare equipment manufacturer

3.2.3.5 Innovators and early adopters

One particular group of important individuals in the diffusion process are early adopters or innovators. They are the first to adopt a new product or service and have an impact on other consumers. Among more affluent consumers, earlier adopters, among other factors, tend to have higher income and wealth as well as a better education and are more likely to be employed than later adopters (Mahajan et al., 1990).

It is difficult to say, however, that this would exactly also hold true for low-income consumers that will not have high income or wealth and usually have low education levels. This was reflected also in the answers of the respondents. Younger consumers were described as more curious, especially those that enter into a job and will have a small budget for discretionary spending, which resonates well with Mahajan et al. (1990). This group is likely to own smartphones and has the ability to look at products online. Early adopters are better informed and more confident in taking their own decisions. Also, the mavens of the community, i.e. the opinion leaders that are very vocal about new products and services, were mentioned as early adopters and innovators.

“I think if you go and you see who are the ones that experiment the most, are the youngsters that start to work...if you are young and you have a salary, although it would be of survival, those are the more flexible and the most innovative ones...the first thing he would want to buy is a mobile phone, so you immediately have a digital native. It will not be very good, it will be what he can afford but it will be a smartphone”

Respondent 2 – CEO, Healthcare equipment manufacturer

Furthermore, as many scholars agree that Innovativeness is domain-specific (e.g. Goldsmith and Hofacker, 1991), it would depend on the product, and it is therefore necessary to know your target group well. In general, young people could be more curious and innovative, but in child care, for example, older mothers that carried children before would be the early adopters, because they are more used to the situation and, therefore, more experienced.

Early adopters are curious, they are likely to be younger and like to try new things...In healthcare it might be different. Let's say I am an experienced mum, I might pick up a product

quicker. A mother that has her first child would be way more cautious than a mother that had several children”

Respondent 7 – Senior Scientist Health Informatics, Electronics manufacturer

3.3 Conclusion

In conclusion, study 1 addressed marketers’ view. It is regarding the diffusion process of frugal innovation process and how it differs from the diffusion of conventional innovations, both due to the particularities of the BOP market and of frugal innovations and was able to add to closing the knowledge gap in existing scholarly literature.

Consumers at the BOP are very discerning consumers that are trying to solve their needs with good quality products and are not necessarily less innovative or aspirational than up-market consumers. Products that are given away for free or marketed as “products for the poor” are, therefore, very unlikely to succeed. Marketers of frugal innovations have realized this and promote their products as on par with up-market equivalents.

A strong differentiator from the diffusion of conventional innovations is the communication with consumers. Word of mouth and personal communication, such as large gatherings and activation events, as well as radio, are still the communication media of choice with a group where the majority lives in rural areas and the use of digital technologies is less prevalent. However, this seems to be in a transition process, with the adoption of smartphones on the rise that will lead to the connection of the more remote parts of this world. Particularly the younger generation of BOP is fast in adopting new technologies and social media.

Furthermore, frugal innovations need to be more affordable to be successful compared to conventional innovations. To ensure this, companies bundle products with household essentials or offer financing options, among other possibilities. Moreover, the issues of access and availability have to be solved, particularly in rural areas. Successful cases include the development of digital products with technology that does not require a smartphone or wide spread door-to-door distribution networks. Also, frugal innovations are in need of higher reliability, as some of them are cheaper versions of conventional products where the main innovation lies in the engineering and is not visible to the consumer’s eye. A frugal car will be judged by consumers like a normal car and, therefore, will need to function without any flaws from its launch.

Finally, the study showed that while research regarding diffusion of innovations is extensive in Western developed economies, this is not the case for emerging markets and frugal innovations. For example, respondents were not sure who were the innovators and early adopters among low-income consumers which leaves many opportunities for further research to close this knowledge gap. The particular topic of the characteristics of innovative consumers at the BOP will be discussed in the second study of this research.

4 Study 2: Innovativeness and its correlates

4.1 Methodology

The objective of study 2 was to build on the insights of study 1 and to create a deeper understanding of early adopters and innovators in low-income markets. Research regarding the socioeconomic characteristics and correlates of *Innovativeness* has largely been conducted in Western markets (Kaushik and Rahman, 2014). There researchers found that earlier adopters tend to have higher socioeconomic status, are likely to be employed and have higher education (Mahajan et al., 1990). Furthermore, positive correlations of *Innovativeness* have been found with *opinion leadership* (Bartek and Reinders, 2011) as well as *consumer independent judgement making* with adoption behaviour (Grewal et al., 2000) and negative correlations with *price sensitivity* (e.g. Goldsmith, 1996) and *Susceptibility to Normative Influence* (Clark and Goldsmith, 2006).

In order to verify whether research results would also hold in low-income markets, the author developed a questionnaire that replicated research from developed markets. To measure *Innovativeness* the author used the 20-item Motivated Consumer Innovativeness scale by Vandecasteele and Geuens (2010) that measures the dimensions *Social*, *Functional*, *Hedonic* and *Cognitive Innovativeness* and that proved to explain a significantly higher percentage of the variance of buying intention than similar scales by Venkatraman & Price (1990) and Tellis et al. (2009) (Vandecasteele and Geuens, 2010).

To test for *Innovativeness*' correlates, the author adapted a *Price Sensitivity* scale from Goldsmith and Newell (1997), a *Susceptibility to Normative Influence* scale by Clark and Goldsmith (2006) and an *Opinion Leadership* scale by Goldsmith (2008). The scale items of these scales referred to specific product categories, such as fashion, and were generalized for this study. Then, the *Consumer Independent Judgement Making* scale by Midgley and Dowling (1978) was added.

Furthermore, the author developed a set of items that identifies whether a respondent belongs to the Brazilian Funk culture. The author included the questions after conducting an informal conversation with favela community members where the research took place that indicated that the most innovative community members would be part of the funk culture. Funk is a type of music, originated in the US and that took over Brazil in the 1970s.¹³ While there are different sub-genres of funk, the set of items had the objective to analyse whether the presence of any form of funk would be positively correlated with the Innovativeness of respondents. Therefore, the questions were designed to identify, how present any type of funk is in the life of a respondent through, e.g. concerts or seeing funk artists as role models.

Finally, the questionnaire was completed with questions about the socio-economic status of respondents regarding social media usage, gender, age, education and ethnicity (full questionnaire Appendix B).

Due to the fact, that the research was conducted in Brazil, the questionnaire was translated into Portuguese and from Portuguese back to English and then further refined, to ensure that the

¹³ Source: https://www.correiobraziliense.com.br/app/noticia/diversao-e-arte/2018/08/07/interna_diversao_arte,699492/funk-brasileiro-das-raizes-classicas-ate-a-nova-geracao-frenetica.shtml Accessed on October 7th 2019

Portuguese translation accurately reflects the English questions. The Portuguese questionnaire is added as Appendix C.

4.2 Results

4.2.1 Descriptive Statistics

4.2.1.1 Socio-economic data

The research was conducted with a convenience sample from the regions of Heliópolis and Jardim Angela that form part of the city of São Paulo. Heliópolis is the largest favela from São Paulo city, with 200 thousand inhabitants, mostly from low income. Jardim Angela is a region in the South region of São Paulo city with more than 290 thousands inhabitants, mostly from low income. Most of them are afrodescendents (60% against São Paulo average of 32%) and the average age that people die is 59 (against São Paulo average of 69)¹⁴.

The sample was chosen due to the proximity and network of the author. The questionnaires were handed out in person. People from the regions were hired and trained to conduct the surveys. 100 people in each region answered the questionnaire. 4 respondents were discarded because of insufficient answers. 33 more respondents that reported a family income above 4,990 R\$ were removed because of the study's objective to analyse consumers at the BOP. While these respondents live in low-income neighbourhoods, they do not belong to the BOP because of their family income. To calculate whether the income was adequate, the threshold of 10 USD for the BOP in Latin America, a household size of 3.3 and the current exchange rate was used.¹⁵¹⁶ In total, therefore, the answers of 163 respondents were analysed. An overview of the socio-economic characteristics of the sample is depicted in Table 5.

Table 5: Socio-economic data

| Variables | Number | Percentage |
|----------------------------|--------|------------|
| Region | | |
| 1 Heliópolis | 77 | 47 |
| 2 Jardim Angela | 86 | 53 |
| Gender | | |
| 1 Don't say | 8 | 5 |
| 2 Female | 60 | 37 |
| 3 Male | 95 | 58 |
| Age | | |
| 1 ≤ 19 | 28 | 17 |
| 2 20-29 | 63 | 39 |
| 3 30-39 | 45 | 28 |
| 4 > 40 | 27 | 17 |
| Family Income (R\$) | | |
| 1 Less than 998 | 10 | 6 |

¹⁴ Source: Rede Nossa São Paulo. <https://www.nossasaopaulo.org.br/> Accessed on November 13th 2019

¹⁵ Source:

https://www.un.org/en/development/desa/population/publications/pdf/ageing/household_size_and_composition_around_the_world_2017_data_booklet.pdf Accessed on October 11th 2019

¹⁶ Exchange Rate of 4.1034 USD/BRL; Source: <https://www.bloomberg.com/quote/USDBRL:CUR> Accessed on October 11th 2019

| | | |
|---------------------|----|----|
| 2 Between 1999-1996 | 45 | 28 |
| 3 Between 1997-2004 | 51 | 31 |
| 4 Between 2005-2010 | 57 | 35 |

Education

| | | |
|-----------------------------|----|----|
| 1 Middle School uncompleted | 15 | 9 |
| 2 Middle School completed | 9 | 6 |
| 3 High School uncompleted | 24 | 15 |
| 4 High School completed | 68 | 42 |
| 5 College | 42 | 26 |
| 6 Post-graduate studies | 5 | 3 |

Race

| | | |
|-----------------|----|----|
| 1 White | 64 | 39 |
| 2 Mixed | 50 | 31 |
| 3 Asian | 4 | 2 |
| 4 Indigenous | 4 | 2 |
| 5 Black | 36 | 22 |
| 6 Don't declare | 5 | 3 |

Social Media

| | | |
|---------------------|----|----|
| 1 No | 3 | 2 |
| 2 Less than 2 hours | 29 | 18 |
| 3 Between 2-4 hours | 41 | 25 |
| 4 Between 4-6 hours | 43 | 26 |
| 5 Between 6-8 hours | 19 | 12 |
| 6 More than 8 hours | 27 | 17 |
| 7 NA | 1 | 1 |

The respondents have an average age of 30.2 with 67% being between 20 and 40 and the group of 20-30 being the largest ones with 63 respondents. Regarding gender, there were more male respondents than female (58% vs. 37%) with a small proportion that decided not to declare gender.

The ethnic composition of the sample differs from the composition of the Brazilian population, as it has a significantly higher share of people identifying themselves as *Black* (22.1% compared to 7.6%), a substantially higher share of *Indigenous* (2.5% compared to 0.43%) and a, therefore, lower share of *Whites* (39.3% compared to 47.7%) and respondents that identify themselves as *Pardos* or *Multiracial* (30.7% compared to 43.1%).¹⁷

Furthermore, the sample shows, that 86% of respondents have at least reached high school and 29% finished university. However, also more than a quarter of respondents have not finished high school. The reported level of education is higher than for the overall population, with 29% possessing a college degree and 5% post-graduate education, compared to 18% and 0.8% in the overall population.¹⁸

When looking at income, only a small proportion of respondents reported a family income below 8 USD a day (around USD 2.5 for an average family of 3.3 people). Most respondents

¹⁷ Source: <https://censo2010.ibge.gov.br/resultados.html> Accessed on October 11th 2019

¹⁸ Source: https://www.oecd.org/education/education-at-a-glance/EAG2019_CN_BRA.pdf Accessed on October 15th 2019

are evenly distributed in the brackets of 8-16 USD, 16-24 USD and 24-41 USD with 28%, 31% and 35% respectively.

Finally, respondents were asked about their social media usage, with more than half using social media at least 4 hours a day and 17% spending even more than 8 hours daily on social media. This result is significantly higher than the world average of 136 minutes per day that was published by *Statista* and that shows an increase in average use of 50% since 2012.¹⁹

4.2.1.2 Innovativeness

From the averages of the different dimensions of *Innovativeness*, it can be seen that the respondents score highest on *Hedonic Innovativeness* and *Functional Innovativeness*. The result for FI resonates well with the answers from study 1, as it reflects the motivation for buying a new product because of its ability to save you time or be of help at work. Successful innovations, such as telemedicine services significantly alleviate the hardship of consumers that often need to travel long distances to arrive at a hospital. Another example is the Wonderbag which slow-cooks food, after heating it up initially. It enables women to leave the food unattended, and they can focus on other tasks in the meanwhile.

Table 6: Arithmetic means of overall innovativeness and Innovativeness dimensions

| Variable | OI | SI | FI | HI | CI |
|----------|------|------|------|------|------|
| Average | 3.25 | 2.66 | 3.52 | 3.84 | 2.97 |

The high average of HI can be explained with the dire circumstances that many consumers at the BOP experience. This increases the purchasing motivation for products that bring joy and pleasure.

Also, the low score on SI can be explained by the circumstances at the BOP. The SI scale measures the motivation to buy products to outdo and impress others. The social environment plays a more important role at the BOP. Families are larger and their influence is much stronger, and people rely on each other for buying or saving clubs and organize each other in religious groups or other networks (Chikweche and Fletcher, 2010). People would also put significant effort in organizing the inside of their house nicely, while this is not done for the outside, because it might cause envy of other community members. Therefore, outdoing and impressing others does not serve as a strong motivation to purchase an innovation. Finally, the results show that consumers at the BOP are less interested in products that pose a cognitive challenge.

4.2.2 Inferential Statistics

4.2.2.1 Spearman Correlation Coefficient

To analyse whether correlations found in Western studies could be found in a study replicated in a low-income context, the author performed a *Spearman Correlation* analysis. It shows the “strength of the relationship between two rank variables with numbers as values measured by a coefficient” (Iversen and Gergen, 1997, p.535). The coefficient lies between -1 and 1. Values below 0 indicate that a high value for one variable predicts a low value for the other, while values above 0 indicate that a high value for one variable predicts also a high value for the other.

¹⁹ Source: <https://www.statista.com/statistics/433871/daily-social-media-usage-worldwide/> Accessed October 11th 2019

If a *perfect* correlation of two variables exists, their correlation coefficient is -1.0 or 1.0 respectively.

For this analysis a correlation lower than 0.3 does not establish any correlation, a coefficient between 0.3-0.5 describes a weak correlation, 0.5-0.7 a medium correlation and above 0.7 a high correlation between two scales.

First, correlations of OI, measured as the arithmetic average over the 4 dimensions Social Innovativeness (SI), Functional Innovativeness (FI), Hedonic Innovativeness (HI) and Cognitive Innovativeness (CI) with the constructs Funk Culture (FC), Price Sensitivity (PS), Susceptibility to Normative Influence (NI), Consumer Independent Judgement Making (CIJM) and Opinion Leadership (OL) were tested, as well as the correlations of the single dimensions of OI with these scales and the set of Funk Culture items.

Table 7: Spearman Correlation Coefficient

| | OI | SI | FI | HI | CI | FC | PS | NI | CIJM | OL |
|------|---------|---------|---------|--------|---------|---------|---------|--------|---------|-----|
| OI | 1.0 | | | | | | | | | |
| SI | 0.78** | 1.0 | | | | | | | | |
| FI | 0.76** | 0.51** | 1.0 | | | | | | | |
| HI | 0.75** | 0.48** | 0.54** | 1.0 | | | | | | |
| CI | 0.63** | 0.34** | 0.28** | 0.27** | 1.0 | | | | | |
| FC | 0.21** | 0.36** | 0.21** | 0.15* | -0.08 | 1.0 | | | | |
| PS | -0.28** | -0.34** | -0.20** | -0.10 | -0.19** | -0.22** | 1.0 | | | |
| NI | 0.53** | 0.59** | 0.38** | 0.31** | 0.35** | 0.22** | -0.47** | 1.0 | | |
| CIJM | 0.19** | 0.13 | 0.04 | 0.10 | 0.29** | -0.05 | -0.05 | 0.05 | 1.0 | |
| OL | 0.34** | 0.35** | 0.27** | 0.29** | 0.14* | 0.10 | -0.17** | 0.40** | -0.17** | 1.0 |

*p-value <0.1; **p-value<0.05²⁰

Regarding Funk Culture, a weak correlation of 0.36 was found with SI but not with the other dimensions of *Innovativeness*. This can be interpreted that FC is a social phenomenon and would therefore also stronger influence the social dimension of innovativeness, rather than its cognitive or functional aspect. There are funk artists who sport expensive clothing and other luxury products that could increase the motivation of consumers to buy products to distinguish themselves from others.

There was no correlation established between *Price Sensitivity* and *Overall Innovativeness*, only with the social dimension of *Innovativeness*. This is different from results in developed countries where a negative correlation was found repeatedly and seen as a support for a price skimming strategy (Goldsmith, 1996; Newell, 1997; Ramirez and Goldsmith, 2009). This might be explained because low-income consumers are more price sensitive, regardless of their *Innovativeness* due to their limited budget. This is reflected in a high average score on the PS scale of 3.38.

The study found a weak significant correlation of *Overall Innovativeness* and *Opinion Leadership*, confirming studies that innovative consumers are also more vocal about their opinions and their opinions are more sought after (e.g. Grewal et al., 2000). This view was also expressed by respondents of study 1 who thought the “mavens of a community” that influence

²⁰ The p-value establishes whether or not a result of the correlation coefficient is *statistically significant*; Below 0.1, the result is significant with a *confidence level* of 90%, below 0.05, it is significant with a *confidence level* of 95%.

other community members and share their experience with others to also be the most innovative members.

A medium positive correlation of *Susceptibility to Normative Influence* was found with *Overall Innovativeness*, as well as its social dimension (SI), and weak correlations with its functional (FI) and cognitive (CI) dimensions, establishing a clear link between the two constructs. This is the opposite of what was found in a study by Clark and Goldsmith (2006) that found a negative correlation of NI with *Innovativeness*, explaining that individuals would not be afraid to take a risk to adopt new innovations before other members of their group. One point that might explain the different results regarding NI and *Overall Innovativeness* is the use of a different *Innovativeness* scale than in the study by Clark and Goldsmith (2006) that used a *Domain Specific Innovativeness* scale, i.e. a scale regarding a specific product category.

Yet, the correlation of *Innovativeness* and *Susceptibility to Normative Influence* is in line with BOP research, such as a study by Chikweche and Fletcher (2010) that found that buying behaviour of consumers is strongly influenced by the community's norms and expectations, which points at the importance of *Normative Influence*. This is supported by the significant correlation of -0.49 between PS and NI. This shows that the wish to conform to expectations and norms of community members in the adoption of new product significantly reduces how much consumers are impacted by a higher price of a product.

The impact of *Informational Influence* was tested with the construct of *Consumer Independent Judgement Making* that had been found to be positively correlated with *Innovativeness* (Manning et al., 1997; Clark and Goldsmith, 2006). In this study it was found that the CIJM does not correlate either with OI or the individual dimensions of *Innovativeness*. However, the results regarding CIJM were found to be of no statistical significance and will, therefore, not be further discussed by the author.

4.2.2.2 Independence tests

In *Innovativeness* studies in Western developed economies innovative consumers were found to have higher income and wealth with ambiguous results for age (Mahajan et al., 1990; Martinez et al., 1998; Plätz et al., 2014).

In this study the author chose a Chi-Square test to verify whether the different groups of socioeconomic variables, such as different income levels, differ in *Innovativeness* or its dimensions, as well as *Price Sensitivity*, *Susceptibility to Normative Influence*, *Consumer Independent Judgement Making* and *Opinion Leadership*.

Table 8 shows the p-values of the Chi-Square test that indicate whether a statistically significant difference was found between groups within one socioeconomic variable. Gender was not included, as no statistically significant differences were found. Also, statistical differences regarding race will be not analysed further by the author.

Table 8: P-values Chi Square test – Age Group, Education, Income and Social Media

| Scales | OI | SI | FI | HI | CI | FC | PS | NI | CIJM | OL |
|-----------|-------|--------|--------|--------|------|--------|------|------|--------|-------|
| Age Group | 0.75 | 0.02** | 0.29 | 0.84 | 0.57 | 0.00** | 0.72 | 0.21 | 0.90 | 0.08* |
| Education | 0.06* | 0.70 | 0.28 | 0.02** | 0.35 | 0.12 | 0.11 | 0.32 | 0.17 | 0.21 |
| Income | 0.15 | 0.83 | 0.03** | 0.20 | 0.75 | 0.58 | 0.35 | 0.29 | 0.00** | 0.65 |

| | | | | | | | | | | |
|----------------------------|------|-------|------|------|------|------|--------|------|------|------|
| Social Media ²¹ | 0.39 | 0.09* | 0.58 | 0.34 | 0.70 | 0.30 | 0.04** | 0.10 | 0.61 | 0.66 |
|----------------------------|------|-------|------|------|------|------|--------|------|------|------|

*p-value <0.1; **p-value<0.05²²

It was found that consumers under 20 tend to score higher on *Social Innovativeness*. This fits well to results of the first study in this research. Some respondents have stated the impression that younger consumers are more curious and innovative for many product categories. One respondent also stated specifically the importance of the social dimension in the purchasing decision of young people who buy, for example, smartphones to be connected with their friends in social networks. On the other hand, respondents older than 40 years score significantly lower than average.

A strong significance of age was found for *Funk Culture*. Respondents younger than 20 years score substantially above average, while respondents older than 30 years and particularly older than 40 years score significantly lower than average. Funk is very present in Brazilian pop culture and is particularly important for young people.

There was also a difference found regarding *Opinion Leadership* between the different age groups, however, there exists no clear pattern. Consumers that are more vocal about their opinions tend to be younger than 20 or between 30 and 39. Respondents older than 40 have found to score lower than average on *Opinion Leadership*.

Table 9: Averages of Scale Values of SI, FC and OL by Age Group

| Age Group | Average | SI | FC | OL |
|-----------------|---------|------|------|------|
| 1 ≤ 19 | 17.21 | 3.19 | 3.58 | 3.27 |
| 2 20-29 | 24.49 | 2.57 | 3.09 | 3.06 |
| 3 30-39 | 34.00 | 2.60 | 2.39 | 3.22 |
| 4 > 40 | 50.33 | 2.35 | 1.88 | 2.92 |
| Overall Average | 30.15 | 2.65 | 2.78 | 3.11 |

The second finding was that differences exist regarding *Hedonic Innovativeness* and *Overall Innovativeness* for different levels of education.

Table 10: Averages of Scale Values of OI and HI by Education level

| Education | OI | HI |
|-----------------------------|------|------|
| 1 Middle School uncompleted | 3.40 | 4.15 |
| 2 Middle School completed | 3.08 | 3.76 |
| 3 High School uncompleted | 3.43 | 3.82 |
| 4 High School completed | 3.37 | 4.00 |
| 5 College | 2.96 | 3.60 |
| 6 Post-graduate studies | 2.98 | 3.56 |
| Overall Average | 3.25 | 3.84 |

HI is significantly below average for respondents that have at least finished college, while respondents with the lowest level of education score the highest regarding the hedonic dimension of *Innovativeness*. It can be inferred that a certain level of education the motivation

²¹ Respondents not using Social Media (N=3) and NAs excluded from analysis

²² p-value <0.05 is statistically significant with a confidence level of 95%; p-value <0.1 is statistically significant with confidence level of 90%.

to buy products that bring joy and please gets less important. Respondents with the highest two levels of education also score lowest in *Overall Innovativeness*.

Furthermore, a difference regarding *Functional Innovativeness* and *Consumer Independent Judgement Making* was found for distinctive income groups.

Table 11: Averages of Scale Values of FI, CIJM, OI, SI, HI and CI by Income level

| Family Income (R\$) | CIJM | FI | OI | SI | HI | CI |
|---------------------|------|------|------|------|------|------|
| 1 Less than 998 | 3.00 | 3.48 | 2.91 | 2.20 | 3.42 | 2.54 |
| 2 Between 999-1996 | 2.99 | 3.65 | 3.42 | 2.91 | 4.13 | 3.01 |
| 3 Between 1997-2994 | 2.61 | 3.47 | 3.12 | 2.56 | 3.57 | 2.87 |
| 4 Between 2995-4990 | 2.67 | 3.47 | 3.29 | 2.63 | 3.94 | 3.12 |
| Overall Average | 2.76 | 3.52 | 3.25 | 2.66 | 3.84 | 2.97 |

Respondents with a family income lower than R\$ 998 (around USD 2.5 per day per person)²³ score significantly lower on *Overall Innovativeness*. The same is true for the social, hedonic and cognitive dimension of *Innovativeness* on which respondents within the lowest income bucket score significantly below average. That confirms another result from study 1, where respondents indicated that the possibilities to innovate would be significantly lower for people living around the poverty line of USD 1.90.

However, this effect is not visible for the functional dimension that represents the purchasing motivation for products that save consumers time or help them at their job. On this dimension the lowest income group scores only slightly below average. This also resonates well with results from study 1 where respondents indicated that functional products that solve a necessity would have a greater probability to succeed with poor consumers than “nice to have” innovations. Furthermore, it was found that the lower income groups below R\$ 1996 are more independent in their judgement making than respondents of higher income groups.

Another finding was that respondents that are more active than 2 hours per day on social media tend to score higher regarding *Social Innovativeness*. In study 1, respondents indicated that consumers that own a smartphone to research new innovations on the internet or connect with others via social media would show more innovative behaviour. Consumers that are more active on social media are more exposed to advertisements, other people’s behaviour, as well as the opinion of others, which might increase the curiosity for new innovations because of social motives.

Regarding *Price Sensitivity*, it can be seen that respondents who use *Social Media* more than 4 hours per day are less price sensitive than average. Like the result regarding *Social Innovativeness* this could be explained with the higher exposure to advertisement which increases the interest in new products and might reduce the sensitivity to higher prices.

Table 12: Averages of Scale Values of SI and PS by Social Media Usage

| Social Media | SI | PS |
|---------------------|------|------|
| 2 Less than 2 hours | 2.31 | 3.47 |
| 3 Between 2-4 hours | 2.70 | 3.67 |
| 4 Between 4-6 hours | 2.76 | 3.36 |
| 5 Between 6-8 hours | 2.82 | 3.29 |
| 6 More than 8 hours | 2.72 | 2.97 |

²³ Exchange Rate of 4.1034 USD/BRL and Household Size of 3.3 people

| | | |
|----------------|------|------|
| <i>Overall</i> | 2.66 | 3.38 |
|----------------|------|------|

4.3 Discussion & Conclusion

Study 2 of this research had the objective to deepen and quantify study 1 and to establish characteristics of innovators and early adopters in the low-income market. It was successful to fulfil this objective, identifying correlations of *Innovativeness* with *Funk Culture*, *Price Sensitivity*, *Susceptibility to Normative Influence*, *Consumer Independent Judgement Making* and *Opinion Leadership*, as well as the influence of socioeconomic characteristics, to help closing the knowledge gap regarding early adopters among low-income consumers.

The study showed that consumers at the BOP seek products that save them time or help them at work, as well as products that bring joy and pleasure, as opposed to products that consumers buy to distinguish themselves from others or products that are offering a cognitive challenge.

Innovators and early adopters at the BOP were found to be more strongly influenced by normative influence. Compared to less innovative consumers, they try stronger to conform to other people's expectations when deciding to adopt an innovation or not, compared to less innovative consumers. In BOP markets community members depend much more on each other. Therefore, trying to conform to other people's beliefs and to buy products that are accepted can be an important motivation for innovative behaviour in the sense of early adoption. More innovative consumers also tend to be the opinion leaders in their social environment, which furthers the adoption of new products, as other community members seek the opinion of early adopters. Finally, innovators and early adopters at the BOP were found to be more price sensitive than their up-market equivalents, which can be explained by their lower budget.

Regarding socioeconomic characteristics, consumers that score high on social innovativeness tend to be younger and more active on social media. The latter is particularly interesting in the light of the results of study 1 where various respondents stated that very little advertisement is done online or on social media. While word of mouth might still be the single best alternative for an older generation of BOP consumers, a transition to a more digital consumer that searches for products online and is curious to try new innovations is likely to be on the way.

Regarding income, while it is true that consumers living close to the poverty line of USD 1.90 per day are significantly less innovative, consumers that earn between USD 2.5 and USD 5.0 are the most innovative respondents in the study. Also, when looking at Education, respondents that have only completed middle school score higher on *Hedonic* and *Overall Innovativeness* than respondents with a college or post-graduate degree. This shows that different from the literature that found innovative consumers to be of higher socioeconomic status (e.g. Mahajan et al., 1990) it is possible to identify a segment of innovative people in lower classes.

5 Final Considerations

5.1 Conclusion

This research was able to contextualize the diffusion of frugal innovations and the characteristics of innovative consumers in low-income populations. There were found significant differences of diffusion at the BOP when compared to conventional innovations in up-market contexts. At the BOP, word of mouth plays a more important role and modern means of advertising are used less to communicate with consumers. Another example is the factor *Affordability* that always has to be ensured by both lower prices at good quality and financing options for the poor. This is different from up-market realities where the new iPhone 11 was launched at a price of USD 699 and still attracted millions of consumers from the start²⁴.

Furthermore, it was established that different from existing literature there exist innovative consumers with lower socioeconomic status, once they rise above the poverty line. Both studies in this research showed that consumers living in severe poverty need to use their income to cover their most basic needs and cannot afford innovative behaviour. This is different for innovations that solve a need, such as saving time or helping to improve the performance of a certain task and that would, therefore, also appeal to the poorest consumers. While there already are frugal innovations that solve some of the needs at the BOP, such as frugal diagnostic devices or telemedicine, innovations in food, shelter, clothing and transportation are still largely missing.

BOP consumers that rise above the poverty line tend to seek products that bring them joy and pleasure, as well as functional products. They tend to be less interested in products that are used to impress others or that provide a cognitive challenge. Furthermore, they tend to be more price sensitive than their up-market equivalents. Also, different from up-market consumers, innovative consumers tend to be more strongly influenced by the beliefs and opinions of their peers, which can be explained by the social environment at the BOP. The community is of higher importance and people rely much more on each other, which increases the motivation to buy products that others approve of.

One particularly interesting group of consumers at the BOP are young people that start their working life. Younger people tend to be more innovative and when starting their job, they have a small budget for discretionary spending. One of their first purchases might be a smartphone that turns a young and innovative consumer in a digital native. Respondents that are active on social media were also found to be more innovative. This is of particular interest in a market that is still relying on traditional media and face to face communication but is experiencing a slow transition to a more digital consumer. While companies still do not use social media to communicate with consumers and advertise their products, digital products, such as financial services applications or telemedicine services, are gaining traction because they solve important challenges at the BOP. Financial services help consumers to save money and gain access to financial resources when they might not own a bank account and telemedicine makes medical advice available in the matter of minutes when before whole families travelled vast distances for routine check-ups or follow-up examinations.

While the transition to a digital consumer that is already taking place at the BOP does offer a great opportunity to alleviate the impact of poverty for many people around the world, especially in the fields of finance and healthcare, there remain important blank spots regarding this market. Companies need to seize the opportunity provided by this transition to increase the communication with these consumers on a large scale, which will lead to a better understanding of the needs and wishes of people that can be very innovative but still largely live on the brink

²⁴ Source: <https://www.techradar.com/reviews/iphone-11-review> Accessed on November 5th 2019

of our society. Ultimately, this will foster innovation and create the next generation of business strategies for the BOP.

5.2 Limitations and future research

This study contextualized the main factors that impact diffusion and adoption according to Rogers for frugal innovations in low-income contexts, such as important traits of innovations, the importance of word of mouth and which other communication channels are used and what are important individuals or change makers regarding innovations. Furthermore, it narrowed the knowledge gap regarding innovative consumers in low-income contexts.

Still, there have been some limitations to this research that indicate areas that deserve further future research. Two of them are related to both study 1 and 2. The first one is derived from the fact that both studies were conducted with a convenience sample. In the context of study 1 that means that some important areas of frugal innovations, such as clean water or mobile phones, are not represented by interviewees. Furthermore, Latin America was under represented with one interviewee and China unrepresented, although both countries have large BOP populations. In the context of the second study that means that a specific aspect of diffusion theory was analysed in a geography that was not part of study 1. In future studies a more comprehensive variety of industries and geographical contexts can further close the knowledge gap regarding diffusion of innovation in low-income contexts and build on the results of this research study.

The second area is the role of social media. Respondents in study 1 indicated that there is a transition taking place to a more digital consumer at the BOP, while study 2 found that respondents who spend more time on social media are also more innovative. Future research could improve the understanding of this process, how BOP consumers use social media and how it could be used to communicate with them.

Two further areas are related to study 2 only. *Innovativeness* was tested with an Innovativeness scale which might not translate directly into innovative behaviour or actualized Innovativeness. Future research could test this by including measures of *Actualized Innovativeness*, such as a list of innovative products where respondents indicate whether they own them. This way it can be verified whether innovation scales successfully measure *Innovativeness* at the BOP.

Finally, funk culture was tested in a rather generic way, while different forms of funk can represent very distinct cultural dimensions. Today, the most important subgenres of Funk are *Funk carioca* (“Funk Rio de Janeiro”) that is its traditional form, *funk paulista* (“funk Sao Paulo”) that is about leaving the favelas, better your live and all types of luxury, *funk consciente* (“conscious funk”) whose artists sing about social issues and *funk proibidão* (“forbidden funk”) that revolves around gangs, drugs and violence.²⁵ Moreover, the appearance of *funk pop* led to a further commercialization of the genre and, therefore, a generic set of items to represent funk might not successfully measure any specific social dimension affecting Innovativeness. In future research specific items that represent the *funk proibidão*, for example, could be incorporated where it is possible that consumers are more innovative, as they want to own products that gang members possess. Another possibility would be to use a set of items that represents the *funk paulista* that praises a higher and luxurious standard of living.

²⁵ Source: Accessed on October 7th 2019

6 References

- Aarmio, A., Enkenberg, A., Heikikilä, J. and Hirvola, S. (2002) Adoption and use of mobile services. Empirical evidence from a Finnish survey *Proceedings of the 35th Annual Hawaii International Conference on System Sciences*
- Agarwal, N. and Brem, A. (2012) Frugal and Reverse Innovation – Literature Overview and Case Study Insights from a German MNC in India and China *Proceedings of the 2012 18th International Conference on Engineering, Technology and Innovation*
- Anderson, J. and Markides, C. (2007) Strategic Innovation at the Base of the Pyramid *MIT Sloan Management Review*, Vol. 49, No. 1: 84-89
- Banerjee, A. V. and Duflo, E. (2007) The Economic Lives of the Poor *Journal of Economic Perspectives* Vol. 21: 141-167
- Barki, E. (2015) The last mile: A challenge and an opportunity in *Base of the Pyramid 3.0: Sustainable Development through Innovation & Entrepreneurship* Greenleaf Publishing: 110-122
- Barki, E. and Parente, J. (2006) Consumer Behaviour of the Base of the Pyramid Market in Brazil *Greener Management International* Vol. 56: p. 11-23
- Bartels, J. and Reinders, M. J. (2011) Consumer Innovativeness and its correlates: A propositional inventory for future research *Journal of Business Research* Vol. 64: 601-609
- Bass, F. M. (1969) A new Product Growth for Model Consumer Durables *Management Science* Vol. 5, No. 5: 215-227
- Basu, R. R., Banerjee, P. M. and Sweeny, E. G. (2013) Frugal Innovation: Core Competencies to address Global Sustainability *Journal of Management for Global Sustainability* Vol. 2: 63-82
- Bateman, M. and Chang, H. (2012) Microfinance and the Illusion of Development: From Hubris to Nemesis in Thirty Years *World Economic Review* Vol. 1: 13-36
- Bayus, B. L. and Mason, C. H. (2003) An Empirical Study of Innate Consumer Innovativeness, Personal Characteristics, and New-Product Adoption Behaviour *Journal of the Academy of Marketing Science* Vol. 31, No. 1: 61-73
- Bhatti, Y. (2012) What is frugal, what is innovation? Toward a theory of frugal innovation *Working Paper Said Business School and Green Templeton College*
- Birtchnell, T. (2011) Jugaad as systemic risk and disruptive innovation in India *Contemporary South Asia* Vol. 19, No. 4: 357-372
- Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology *Qualitative Research in Psychology* Vol. 3, No. 2: 77-101
- Cañeque, F. (2015) Open innovations and engagement platforms for inclusive business design in *Base of the Pyramid 3.0: Sustainable Development through Innovation & Entrepreneurship* Greenleaf Publishing: 59-77
- Chandrasekaran, D. and Tellies, G. J. (2007) A Critical Review of Marketing Research on Diffusion of New Products *Review of Marketing Research*, Vol. 3: 39-80

- Chevrollier, N. and Danse, M. (2015) Bridging the pioneer gap in *Base of the Pyramid 3.0: Sustainable Development through Innovation & Entrepreneurship* Greenleaf Publishing: 80-95
- Chikweche, T. and Fletcher, R. (2009) Understanding factors that influence purchases in subsistence markets *Journal of Business Research* Vol. 63: 643-650
- Chikweche, T. and Fletcher, R. (2010) Branding at the base of pyramid: a Zimbabwean perspective *Marketing Intelligence & Planning* Vol. 29, No. 3: 247-663
- Christensen, C. M. (1997) The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail *Harvard Business School Press*
- Clark, R. A. and Goldsmith, R. E. (2006) Global Innovativeness and Consumer Susceptibility to Interpersonal Influence *Journal of Marketing Theory and Practice*, Vol. 14, No. 4: 275-285
- Corsi, S. and Di Minin, A. (2014) Disruptive Innovation...in Reverse: Adding a Geographical Dimension to Disruptive Innovation Theory *Creativity and Innovation Management* Vol. 23, No. 1: 76-90
- Davidson, K. (2009) Ethical Concerns at the Bottom of the Pyramid: Where CSR meets BOP *Journal of International Business Ethics* Vol. 2, No. 1: 22-32
- Davis, F. D. (1989) Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology *MIS Quarterly*, Vol. 13, No. 3: 310-340
- Dey, B. L., Pandit, A., Saren, M., Bhowmick, S. and Woodruffe-Burton, H. (2016) Co-creation of value at the bottom of the pyramid: Analysing Bangladeshi farmers' use of mobile telephony *Journal of Retailing and Consumer Services* Vol. 29: 40-48
- Girardi, A., Soutar, G. N. and Ward, S. (2005) The validation of a use Innovativeness scale *European Journal of Innovation Management* Vol. 8, No. 4: 471-481
- Goldenberg, J., Han, S., Lehmann, D. R. and Hong, J. W. (2009) The Role of Hubs in the Adoption Process *Journal of Marketing*, Vol. 73: 1-13
- Goldsmith, R. E. and Hofacker, C. F. (1991) Measuring Consumer Innovativeness *Journal of the Academy of Marketing Science* Vol. 19, No. 3: 209-221
- Goldsmith, R. E. and Newell, S. J. (1997) Innovativeness and price sensitivity: managerial, theoretical and methodological issues *Journal of Product & Brand Management* Vol. 6, No. 3: 163-174
- Goldsmith, R. E., Freiden, J. B. and Eastman, J. K. (1995) The generality/specificity issue in consumer Innovativeness research *Technovation* Vol. 15, No. 10: 601-612
- Goldsmith, R. E., Kim, D., Flynn, L. R. and Kim, W. (2005) Price Sensitivity and Innovativeness for Fashion Among Korean Consumers *The Journal of Social Psychology* Vol. 145, No. 5: 501-508
- Govindarajan, V. and Euchner, J. (2012) Reverse Innovation *Research-Technology Management* Vol. 55, No. 6: 13-17
- Govindarajan, V. and Ramamurti, R. (2011) Reverse Innovation, Emerging markets, and Global Strategy *Global Strategy Journal* Vol. 1: 191-205

- Grewal, R., Mehta, R. and Karde, F. R. (2000) The role of the social-identity function of attitudes in consumer Innovativeness and opinion leadership *Journal of Economic Psychology* Vol. 21: 233-252
- Gupta, A. and Tandon, A. (2018) Branding for Bottom of the Pyramid: A Case of Branded Footwear Consumer in Indian Rural Setting *Emerging Markets from a Multidisciplinary Perspective*, Advances in Theory and Practice of Emerging Markets, Springer International Publishing AG
- Hang, C., Chen, J. and Subramian, A. M. (2010) Developing Disruptive Product for Emerging Economies: Lessons from Asian Cases *Research-Technology Management* Vol. 53, No. 4: 21-26
- Hoffmann, S. and Soyezy, K. (2010) A cognitive model to predict domain-specific consumer Innovativeness *Journal of Business Research* Vol. 63: 778-785
- Hossain, M., Simula, H. and Halme, M. (2016) Can frugal go global? Diffusion patterns of frugal innovations *Technology in Society* 46: 132-139
- Ismail, T. (2015) Building inclusive markets from the inside out in *Base of the Pyramid 3.0: Sustainable Development through Innovation & Entrepreneurship* Greenleaf Publishing: 31-44
- Iversen, G.R. and Gergen, M. (1997) Statistics: The Conceptual Approach *Springer Undergraduate Textbooks in Statistics*
- Iyengar, R. and Van den Bulte, C. (2011) Opinion Leadership and Social Contagion in New Product Diffusion *Marketing Science*, Vol. 30, No. 2: 195-212
- Kahle, H. N., Dubiel, A., Ernst, H. and Prabhu, J. (2013) The democratizing effects of frugal innovations: Implications for inclusive growth and state-building *Journal of Indian Business Research* Vol. 5, No. 4: 220-234
- Karnani, A. (2007) The Mirage of Marketing to the Bottom of the Pyramid: How the Private Sector Can Help Alleviate Poverty *California Management Review* Vol. 49, No. 4: 90-111
- Kaushik, A. K. and Rahman, Z. (2014) Perspectives and Dimensions of Consumer Innovativeness: A Literature Review and Future Agenda *Journal of International Consumer Marketing* Vol. 26: 239-263
- Kennedy, R. (2010) Innovation for the BOP: The Patient Capital Approach in *Next Generation Business Strategies for the Base of the Pyramid: New Approaches for building Mutual Value* Pearson FT Press: 45-78
- Kohl, J. W. (1966) Adoption Stages and Perceptions of Characteristics of Educational Innovations *Ed. D. diss., University of Oregon, Eugene. E(E)*
- Kolk, A., Rivera-Santos, M. and Rufín, C. (2014) Reviewing a Decade of Research on the “Base/Bottom of the Pyramid” (BOP) Concept *Business & Society* Vol. 53, No. 3: 338-377
- Lim, C. and Fujimoto, T. (2019) Frugal innovation and design changes expanding the cost-performance frontier: A Schumpeterian approach *Research Policy* Vol. 48: 1016-1029
- London, T. (2010) Building Better Ventures with the Base of the Pyramid: A Roadmap in *Next Generation Business Strategies for the Base of the Pyramid: New Approaches for building Mutual Value* Pearson FT Press: 19-44

- London, T. and Hart, S. L. (2010) Next Generation Business Strategies for the Base of the Pyramid: New Approaches for Building Mutual Value *Pearson FT Press*
- Mahajan, V., Muller, E. and Bass, F. M. (1990) New Product Diffusion Models in Marketing: A Review and Directions for Research *Journal of Marketing* Vol. 54: 1-26
- Manning, K. C., Bearden, W. O. and Madden, T. J. (1995) Consumer Innovativeness and the Adoption Process *Journal of Consumer Psychology* Vol. 4, No. 4: 329-345
- Marangunic, N. and Granic, A. (2015) Technology acceptance model: a literature review from 1986 to 2013 *Universal Access in the Information Society* Vol. 14: 81-95
- Martinez, E., Polo, Y. and Flavián, C. (1998) The acceptance and diffusion of new consumer durables: differences between first and last adopters *Journal of Consumer Marketing*, Vol. 15, No. 4: 323-342
- Meyer, M., Johnson, J. D. and Ethington, C. (1997) Contrasting Attributes of Preventive Health Innovations *Journal of Communication* Vol. 47, No. 2: 112-131
- Midgley, D. F. and Dowling, G. R. (1978) Innovativeness: The Concept and Its Measurement *Journal of Consumer Research* Vol. 4: 229-242
- Nahi, T. (2016) Cocreation at the Base of the Pyramid: Reviewing and Organizing the Diverse Conceptualizations *Organization and Environment*: 1-22
- Nakata, C. and Weidner, K. (2012) Enhancing New Product Adaption at the Base of the Pyramid: A Contextualized Model *Journal of Production Innovation Management* Vol. 29, No. 1: 21-32
- Noy, C. (2008) Sampling Knowledge: The Hermeneutics of Snowball Sampling in Qualitative Research *International Journal of Social Research Methodology*, Vol. 11, No. 4: 327-344
- Payaud, M. (2014) Marketing Strategies at the Bottom of the Pyramid: Examples From Nestlé, Danone, and Procter & Gamble *Global Business and Organizational Excellence* Vol. 33, No. 2: 51-63
- Peres, R., Muller, E. and Mahajan, V. (2010) Innovation diffusion and new product growth models: A critical review and research directions *International Journal of Research in Marketing*, Vol. 27: 91-106
- Plötz, P., Schneider, U., Globisch, J. and Dütschke, E. (2014) Who will buy electric vehicles? Identifying early adopters in Germany
- Prahalad, C. K. (2005) The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits *Wharton School Publishing*
- Prahalad, C. K. and S. Hart (2002) The Fortune at the Bottom of the Pyramid *Strategy+Business* Vol. 26, No. 1: 55-67
- Rahman, M., Hasan, M. R. and Floyd, D. (2013) Brand Orientation as a Strategy That Influences the Adoption of Innovation in the Bottom of the Pyramid Market *Strategic Change* Vol. 22: 225-239
- Raju, P. G. (2018) Integrating Unbanked Rural Populations through Frugal Innovation: A Case of Grammateller in India *South Asian Journal of Business and Management Cases* Vol. 7, No. 2: 79-92

- Ramdorai, A. and Herstatt, C. (2017) Lessons from Low-Cost Healthcare Innovations for the Base-of the Pyramid Markets: How Incumbents Can Systematically Create Disruptive Innovations *Lead Market India, India Studies in Business and Economics*, Springer International Publishing: 119-144
- Ramirez, E. and Goldsmith, R. E. (2009) Some Antecedents of Price Sensitivity *Journal of Marketing Theory and Practice* Vol. 17, No. 3: 199-214
- Rao, B. C. (2013) How disruptive is frugal? *Technology in Society* Vol. 35: 65-73
- Ratcliff, R. and Doshi, K. (2016) Using the Bass Model to Analyse the Diffusion of Innovations at the Base of the Pyramid *Business & Society* Vol. 55, No. 2: 271-298
- River-Santos, M. and Rufín, C. (2010) Global village vs. small town: Understanding networks at the Base of the Pyramid *International Business Review* Vol. 19: 126-139
- Roehrich, G. (2004) Consumer Innovativeness: Concepts and measurements *Journal of Business Research* Vol. 57: 671-677
- Rogers, E. M. (2003) Diffusion of Innovations (5th Edition) *Free Press*
- Rogers, E. M. (2004) A Prospective and Retrospective Look at the Diffusion Model *Journal of Health Communication*, Vol. 9: 13-19
- Rogers, E. M. and D. L. Kincaid (1981) Communication Networks: Toward a New Paradigm for Research *New York: Free Press. C(E)*
- Rollins, T. (1993) Using the Innovation Adoption Diffusion Model to Target Educational Programming *Journal of Agricultural Education*, Vol. 34, No. 4: 46-54
- Rosca, E., Arnold, M. and Bendul, J. C. (2017) Business models for sustainable innovation – an empirical analysis of frugal products and services *Journal of Cleaner Production* Vol. 162: 133-145
- Shaikh, A. A. and Karjaluoto, H. (2015) Mobile banking adoption: A literature review *Telematics and Informatics*, Vol. 32: 129-142
- Simanis, E. (2010) Needs, Needs, Everywhere, But Not a BOP Market to Tap in *Next Generation Business Strategies for the Base of the Pyramid: New Approaches for building Mutual Value* Pearson FT Press: 103-128
- Simanis, E., Hart, S., DeKoszmovszky, J., Donohue, P., Duke, D., Enk, G., Gordon, M. and Thieme, T. (2008) The Base of the Pyramid Protocol: Toward Next Generation BOP Strategy, Retrieved online from: http://www.stuartlhart.com/sites/stuartlhart.com/files/BOPProtocol2ndEdition2008_0.pdf (last access August 3rd 2019)
- Soni, P. and Krishnan, R. T. (2014) Frugal innovation: aligning theory, practice, and public policy *Journal of Indian Business Research* Vol. 6, No. 1: 29-47
- Souto, J. E. (2015) Business model innovation and business concept innovation as the context of incremental innovation and radical innovation *Tourism Management* Vol. 51: 142-155
- Tiwari, R. and Herstatt C. (2012) Frugal Innovation: A Global Networks' Perspective *Die Unternehmung, Swiss Journal of Business Research and Practice* Jahrgang 66, Heft 3: 245-274

- Tornatzky, L. G. and Klein, K. J. (1982) Innovation characteristics and innovation adoption-implementation: A meta-analysis of finding *IEEE Transactions on Engineering Management* Vol. 29, No. 1: 28-45
- Valente, T. W. and Davis, R. L. (1999) Accelerating the Diffusion of Innovations Using Opinion Leaders *The ANNALS of the American Academy of Political and Social Science*
- Van den Bulte, C. and Stremersch, S. (2014) Social Contagion and Income Heterogeneity in New Product Diffusion: A Meta-Analytic Test *Marketing Science* Vol. 23, No. 4: 530-544
- Van Eck, P. S., Jager, W. and Leeflang, P. S. H. (2011) Opinion Leaders' Role in Innovation Diffusion: A Simulation Study *Journal of Product Innovation Management*, Vol. 28: 187-203
- Vandecasteele, B. and Geuens, M. (2010) Motivated Consumer Innovativeness: Concept, measurement and validation *International Journal of Research in Marketing* Vol. 27: 308-318
- Varadarajan, R. (2009) Fortune at the bottom of the innovation pyramid: The strategic logic of incremental innovations *Business Horizons* Vol. 52: 21-29
- Venkatesh, V. and Davis, F. D. (2000) A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies *Management Science*, Vol. 46, No. 2: 186-204
- Venkatesh, V., Morris, M. G., Davis, G. B. and Davis, F. D. (2003) User Acceptance of Information Technology: Toward a Unified View *MIS Quarterly*, Vol. 27, No. 3: 425-478
- Viswanathan, M. (2010) A Micro-Level Approach to Understanding BOP Markets *in Next Generation Business Strategies for the Base of the Pyramid: New Approaches for building Mutual Value* Pearson FT Press: 129-164
- Viswanathan, M., Sridharan, S. and Ritchie, R. (2010) Understanding consumption and entrepreneurship in subsistence marketplaces *Journal of Business Research* Vol. 63: 570-581
- Wellen, L. and van Dijk, M. P. (2019) Frugal financial innovations for inclusive finance: the experience with customer care at M-Pesa in Kenya *Enterprise Development and Microfinance* Vol. 29, No. 3-4: 262-275
- Weyrauch, T. and Herstatt, C. (2016) What is frugal innovation? Three defining criteria *Journal of Frugal Innovation* 2:1
- Winterhalter, S., Zeschky, M. B., Neumann, L. and Gassmann, O. (2017) Business Models for Frugal Innovation in Emerging Markets: The Case of the Medical Device and Laboratory Equipment Industry *Technovation* Vol. 66-67: 3-13
- Yu, D. and Hang, C. C. (2010) A Reflective Review of Disruptive Innovation Theory *International Journal of Management Reviews* Vol. 12: 435-452
- Yurdakul, D., Atik, D. and Dholakia, N. (2017) Redefining the bottom of the pyramid from a marketing perspective *Marketing theory* Vol. 17, No. 3: 289-303
- Zanello, G., Fu, X., Mohnen, P. and Ventresca, M. (2015) The creation and diffusion of innovation in developing countries: a systematic literature review *Journal of Economic Surveys* Vol. 30, No. 5: 884-912
- Zeschky, M., Widenmayer, B. and Gassmann, O. (2011) Frugal Innovation in Emerging Markets *Research-Technology Management*, Vol. 54, No. 4: 38-45

7 Appendix

7.1 Appendix A: Interview questions

1. What does frugal mean to you? What characterizes a frugal innovation for you? Would you classify your product as a frugal innovation?
2. What characterizes the low-income consumer in your opinion? How does he differ from the “conventional” consumer (consumption behaviour, decision making, adoption of innovations, etc.)? Is the low-income consumer more conservative than the conventional consumer? What is important for the low-income consumer? What does he like/not like?
3. What are important steps in the launch of a product for low-income consumers? What are the important steps in marketing regarding the product (promotion, reduction in price, etc.)? How does this differ from conventional product launches?
4. How can the diffusion process of innovations among low-income consumers be described over time? Does the adoption process follow a certain shape, e.g. s-shape curve? How does this differ from conventional innovations? Do innovations among low-income consumers diffuse faster or slower?
5. Can stages be identified in the adoption process, such as knowledge about the product, decision, confirmation of the decision, etc.? What steps might companies take in the certain stages to influence the decision to adopt? How might this differ from conventional innovations?
6. How does the social network of low-income consumers influence the decision to adopt an innovation or not? Are there important individuals that have impact on the adoption decision of low-income consumer, e.g. shop owners, local politicians, etc.? Is this different from conventional innovations?
7. Can there be different categories of adopters among low-income consumers identified regarding the time of adoption (early vs. late)? How can they be characterized? Do these categories differ from conventional consumers?
8. What communication channels are used to communicate with low-income consumers? What role does word of mouth communication play among low-income consumers? How do those affect the adoption of innovation? How do these channels differ from conventional innovations?
9. What are the traits of an innovation, that influence the diffusion among low-income consumers e.g. the relative advantage of a new product over an old one, or its Complexity? Are there differences whether it is a more basic product or more technological? Do they differ from conventional innovations?
10. What role do brands play in the adoption of new products (aspirational to own a certain brand, brand conveys quality, etc.)? Are they of more importance or less compared to conventional innovations?

7.2 Appendix B: Questionnaire study 2 in English

1. How much time to you spend daily on social media, such as Instagram, YouTube, Facebook, etc.

- a. () No
- b. () Less than 2 hours
- c. () Between 2-4 hours
- d. () Between 4-6 hours
- e. () Between 6-8 hours
- f. () More than 8 hours

2. Who do you follow on social media (3 principal ones):

- a) _____
- b) _____
- c) _____

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
| 3. I like to listen to funk | | | | | |
| 4. I like to frequently attend funk parties | | | | | |
| 5. I like to frequently attend funk shows | | | | | |
| 6. I know the newest funk artists and songs | | | | | |
| 7. I understand and use the slang of the funk culture | | | | | |
| 8. I see funk artists and community members that represent the funk culture as role models | | | | | |

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
| 9. I love to use new products that impress others | | | | | |
| 10. I like to own a new product that distinguishes me from others who do not own this new product | | | | | |
| 11. I prefer to try new products with which I can present myself to my friends and neighbours | | | | | |
| 12. I like to outdo others and I prefer to do this by buying new products which my friends do not have | | | | | |
| 13. I deliberately buy new products that are visible to others and which command respect from others | | | | | |

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
| 14. If a new time-saving product is launched, I will buy it right away | | | | | |
| 15. If a new product gives me more comfort than my current product, I would not hesitate to buy it | | | | | |
| 16. If a new product is more functional, then I usually buy it | | | | | |
| 17. If I discover a new product in a more convenient size, I am very inclined to buy it | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| 18. If a new product makes my work easier, then I have to buy it | | | | | |
|--|--|--|--|--|--|

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|-------------------|----------|---------|-------|----------------|
| 19. Using new products gives me a sense of personal enjoyment | | | | | |
| 20. It gives me a good feeling to acquire new products | | | | | |
| 21. Innovations make my life exciting and stimulating | | | | | |
| 22. Acquiring a new product makes me happier | | | | | |
| 23. The discovery of novelties makes me playful and cheerful | | | | | |

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|-------------------|----------|---------|-------|----------------|
| 24. I mostly buy new products that satisfy my analytical mind | | | | | |
| 25. I find new products that need a lot of thinking intellectually challenging and therefore I buy them instantly | | | | | |
| 26. I often buy new products that make me think logically | | | | | |
| 27. I often buy innovative products that challenge the strengths and weaknesses of my intellectual skills | | | | | |
| 28. I am an intellectual thinker who buys new products because they set my brain to work | | | | | |

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|-------------------|----------|---------|-------|----------------|
| 29. I am less willing to buy new products if I think that they will be high in price | | | | | |
| 30. I know that new products are likely to be more expensive than older ones, but that doesn't matter to me | | | | | |
| 31. In general, the cost of buying a new product is important to me | | | | | |
| 32. I don't mind paying more to try out a new product | | | | | |

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
| 33. It is important that others like the products and brands that I buy | | | | | |
| 34. I rarely purchase the latest fashion style until I am sure that my friends approve of them | | | | | |
| 35. I often identify with other people by purchasing the same products and brands they purchase | | | | | |
| 36. When buying products, I generally purchase those brands, that I think others will approve of | | | | | |
| 37. I like to know what brands and products make good impressions on others | | | | | |
| 38. If other people can see me using a product, I often purchase the brand they expect me to buy | | | | | |
| 39. I achieve a sense of belonging by purchasing the same products and brands that others purchase | | | | | |

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
| 40. Prior to purchasing a new brand, I prefer to consult a friend that has experience with the new brand | | | | | |
| 41. When it comes to deciding whether to purchase a new service, I do not rely on experienced friends or family members for advice | | | | | |
| 42. I seldom ask a friend about his or her experiences with a new product before I buy the new product | | | | | |
| 43. I decide to buy new products and services without relying on the opinions of friends who have already tried them | | | | | |
| 44. When I am interested in purchasing a new service, I do not rely on my friends or close acquaintances that have already used the new service to give me information as to whether I should try it | | | | | |
| 45. I do not rely on experienced friends for information about new products prior to making up my mind whether or not to purchase | | | | | |

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|-------------------|----------|---------|-------|----------------|
| 46. I often persuade other people to buy the products that I like | | | | | |
| 47. Other people rarely come to me for advice about choosing new products | | | | | |
| 48. People that I know pick new products based on what I told them | | | | | |
| 49. My opinion of new products seems not to count with other people | | | | | |
| 50. I often influence people's opinion about new products | | | | | |
| 51. When people choose to buy new products, other people do not turn to me for advice | | | | | |

52. What is your gender:

- a. () Masculine
- b. () Feminine
- c. () I do not want to declare

53. What is your age: _____

54. What is your level of education?

- a. () Middle School incompleted
- b. () Middle School completed
- c. () High School incompleted
- d. () High School completed
- e. () College
- f. () Post-graduate

55. What is your monthly income?

- a. () Less than R\$ 998.00

- b. () Between R\$ 999-R\$ 1,996
- c. () Between R\$ 1,997 -R\$ 2,994
- d. () Between R\$ 2,995-R\$ 4,990
- e. () Between R\$ 4,991-R\$ 9,980
- f. () More than R\$ 9,980

56. How do you auto declare your racial-ethnic profile?

- a. () White
- b. () Mixed
- c. () Asian
- d. () Indigenous
- e. () Black
- f. () I do not want to declare

7.3 Appendix C: Questionnaire study 2 in Portuguese

1. Quanto tempo você gasta diariamente em redes sociais como Instagram, YouTube, Facebook, etc.

- a. () Não uso
- b. () 0-2 horas
- c. () 2-4 horas
- d. () 4-6 horas
- e. () 6-8 horas
- f. () mais de 8 horas

2. Quem você segue nas redes sociais (três principais):

- d) _____
- e) _____
- f) _____

Agora vou ler algumas frases, e gostaria de saber o quanto você concorda ou discorda das frases. Você pode concordar totalmente, concordar parcialmente, nem concordar nem discordar, discordar parcialmente ou discordar totalmente.

| | Discordo Totalmente | Discordo | Nem concordo nem discordo | Concordo parcialmente | Concordo Totalmente |
|---|------------------------|----------|---------------------------------|--------------------------|------------------------|
| 3. Gosto de ouvir Funk | | | | | |
| 4. Gosto de ir a bailes Funk | | | | | |
| 5. Gosto de ir a shows e eventos de funk | | | | | |
| 6. Conheço os artistas e músicas funk mais recentes | | | | | |
| 7. Entendo e uso as gírias da cultura funk | | | | | |
| 8. Eu vejo os artistas funk e membros da comunidade que representam a cultura funk como exemplos a seguir | | | | | |

| | Discordo Totalmente | Discordo | Nem concordo nem discordo | Concordo parcialmente | Concordo Totalmente |
|---|------------------------|----------|---------------------------------|--------------------------|------------------------|
| 9. Adoro usar novos produtos que impressionam os outros | | | | | |
| 10. Gosto de ter um novo produto que me diferencia de outros que não tenham esse novo produto | | | | | |
| 11. Eu prefiro experimentar novos produtos com os quais posso me apresentar para meus amigos e vizinhos | | | | | |
| 12. Gosto de superar os outros e prefiro fazê-lo comprando novos produtos que meus amigos não tenham | | | | | |
| 13. Eu intencionalmente compro novos produtos que fiquem visíveis para os outros e que imponham respeito aos outros | | | | | |

| | Discordo Totalmente | Discordo | Nem concordo nem discordo | Concordo parcialmente | Concordo Totalmente |
|--|------------------------|----------|------------------------------|--------------------------|------------------------|
|--|------------------------|----------|------------------------------|--------------------------|------------------------|

| | | | | | |
|--|--|--|--|--|--|
| 14. Se um produto novo que me permite economizar tempo é lançado, eu vou comprá-lo imediatamente | | | | | |
| 15. Se um novo produto me dá mais conforto do que o produto que estou usando no momento, eu não hesito em comprá-lo | | | | | |
| 16. Se um novo produto é mais funcional, eu normalmente o compro | | | | | |
| 17. Se descobro um novo produto em um tamanho mais conveniente, estou bastante inclinado a comprá-lo | | | | | |
| 18. Se um novo produto facilita o meu trabalho, então eu preciso comprá-lo | | | | | |

| | Discordo Totalmente | Discordo | Nem concordo nem discordo | Concordo parcialmente | Concordo Totalmente |
|---|---------------------|----------|---------------------------|-----------------------|---------------------|
| 19. Usar novos produtos me dá uma sensação de prazer pessoal | | | | | |
| 20. Eu me sinto bem ao comprar novos produtos | | | | | |
| 21. Inovações fazem minha vida empolgante e estimulante | | | | | |
| 22. Comprar um produto novo me deixa mais feliz | | | | | |
| 23. Descobrir novidades me deixa brincalhão e alegre | | | | | |

| | Discordo Totalmente | Discordo | Nem concordo nem discordo | Concordo parcialmente | Concordo Totalmente |
|---|---------------------|----------|---------------------------|-----------------------|---------------------|
| 24. Costumo comprar novos produtos que satisfaçam meu raciocínio lógico | | | | | |
| 25. Acho produtos novos que demandem pensar muito intelectualmente desafiadores e por isso os compro instantaneamente | | | | | |
| 26. Frequentemente compro novos produtos que me fazem pensar logicamente | | | | | |
| 27. Com frequência eu compro produtos inovadores que desafiam os pontos fortes e fracos das minhas competências intelectuais | | | | | |
| 28. Sou um pensador intelectual que compra novos produtos porque estes fazem meu cérebro trabalhar | | | | | |

| | Discordo Totalmente | Discordo | Nem concordo nem discordo | Concordo parcialmente | Concordo Totalmente |
|--|---------------------|----------|---------------------------|-----------------------|---------------------|
| 29. Estou menos disposto a comprar produtos novos se acreditar que eles têm um preço alto | | | | | |
| 30. Sei que novos produtos provavelmente são mais caros do que produtos mais antigos, mas não me importo com isso | | | | | |
| 31. Em geral, o custo de comprar um produto novo é importante para mim | | | | | |
| 32. Não me importo de pagar mais para experimentar um produto novo | | | | | |

| | Discordo Totalmente | Discordo | Nem concordo nem discordo | Concordo parcialmente | Concordo Totalmente |
|--|---------------------|----------|---------------------------|-----------------------|---------------------|
|--|---------------------|----------|---------------------------|-----------------------|---------------------|

| | | | | | |
|---|--|--|--|--|--|
| 33. É importante que os outros gostem dos produtos e marcas que eu compro | | | | | |
| 34. Eu raramente compro o estilo da moda atual antes de ter certeza que meus amigos os aprovam | | | | | |
| 35. Eu costumo me identificar com outras pessoas ao comprar os mesmos produtos e marcas que elas compram | | | | | |
| 36. Quando compro produtos, geralmente compro marcas que acredito que os outros vão aprovar | | | | | |
| 37. Gosto de saber quais marcas e produtos causam uma boa impressão nos outros | | | | | |
| 38. Se outras pessoas podem me ver utilizando um produto, costumo comprar da marca que eles esperam que eu compre | | | | | |
| 39. Eu sinto pertencimento ao comprar os mesmos produtos e marcas que os outros compram | | | | | |

| | Discordo Totalmente | Discordo | Nem concordo nem discordo | Concordo parcialmente | Concordo Totalmente |
|---|---------------------|----------|---------------------------|-----------------------|---------------------|
| 40. Antes de comprar uma marca nova, prefiro consultar um amigo que tenha experiência com essa marca nova | | | | | |
| 41. Quando preciso decidir se compro ou não um novo serviço, eu não me baseio em conselhos de amigos ou familiares | | | | | |
| 42. Raramente eu pergunto para um amigo sobre a experiência dele(a) com um novo produto antes de comprar o novo produto | | | | | |
| 43. Eu decido comprar um produto ou serviço novo sem me basear nas opiniões de amigos que já o experimentaram | | | | | |
| 44. Quando estou interessado(a) em comprar um novo serviço, não me baseio na opinião de amigos ou conhecidos próximos que tenham utilizado o serviço, sobre se eu devo experimentá-lo | | | | | |
| 45. Não me baseio na opinião de amigos com experiência para informação sobre novos produtos antes de decidir se devo ou não os comprar | | | | | |

| | Discordo Totalmente | Discordo | Nem concordo nem discordo | Concordo parcialmente | Concordo Totalmente |
|---|---------------------|----------|---------------------------|-----------------------|---------------------|
| 46. Costumo convencer outras pessoas a comprarem produtos dos quais gosto | | | | | |
| 47. Outras pessoas raramente me pedem opinião sobre escolher novos produtos | | | | | |
| 48. Pessoas que conheço escolhem novos produtos com base no que falei para elas | | | | | |
| 49. Minha opinião de novos produtos parece não importar para outras pessoas | | | | | |
| 50. Influencio com frequência a opinião das pessoas sobre novos produtos | | | | | |
| 51. Quando outras pessoas escolhem comprar novos produtos, não me pedem conselhos | | | | | |

52. Qual Gênero você se reconhece:

- a. () Masculino
- b. () Feminino

- c. () Prefiro não declarar

53. Qual sua idade: _____

54. Qual seu Nível de escolaridade:

- a. () ensino fundamental incompleto
- b. () ensino fundamental completo
- c. () ensino médio incompleto
- d. () ensino médio completo
- e. () superior
- f. () pós-graduação

55. Qual sua Renda Familiar Mensal

- a. () Menos de R\$ 998,00
- b. () De R\$ 999 a R\$ 1.996
- c. () De R\$ 1.997 a R\$ 2.994
- d. () De R\$ 2.995 a R\$ 4.990
- e. () De R\$ 4.991 a R\$ 9.980
- f. () Mais de R\$ 9.980

56. Como você se auto declara quanto ao seu perfil étnico-racial?

- a. () Branco
- b. () Pardo
- c. () Amarelo
- d. () Indígena
- e. () Negro
- f. () Não quero declarar