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Reverse Innovation: A global strategy to exploit opportunities in emerging and developed markets

A case study based research on innovations that diffuse from emerging into developed markets

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Abstract: The strategy of Reverse Innovation, i.e. innovations that diffuse from emerging into developed countries, has recently gained attention within Academia and renowned business journals. However, extant research about Reverse Innovation has so far merely described the phenomenon and focused on risks and opportunities of Reverse Innovation for developed-market MNEs and the impacts on their organizational structure. In addition, existing research in the field did not include a linking to current theories of innovation and innovation diffusion. This thesis therefore contributes to existing literature by providing a broad empirical description as well as comprehensive theoretical framework. Specifically, it provides an empirical-based overview of the general characteristics of Reverse Innovations, their underlying market dynamics and company-internal motives and processes related to the concept of Reverse Innovation. Using a qualitative research approach, we analyzed 23 cases of Reverse Innovations as well as four in-depth case studies. Based on the insights of the analysis, we observed that Reverse Innovations are typically low-cost products with a great price-performance ratio. Usually, they are continuous innovations that are innovative based on the companies' business model. Reverse Innovations originally target the low-end emerging market and tend to be technological products. The market dynamics that lead to the emergence of the phenomenon showed to be the growing opportunities in emerging markets, the increasing competitiveness of low-cost emerging-country companies, global technology improvements, and Western world's growing demand for inexpensive or value-for-money products. From a company internal perspective, the development of Reverse Innovations is usually based on a frugal innovation approach, in which companies use local R&D engineers, and apply latest technology. Companies were found to diffuse the innovations into developed markets so that they can gain higher economies of scale, and because the innovation shows to be more profitable than its predecessors. Usually, companies target the low-end customer segment in developed markets. From a theoretical perspective, we identified that Reverse Innovations diffuse into developed markets due to their relative advantage, less complexity, and compatibility. Conclusively, our research illustrates that Reverse Innovation is a growing phenomenon that we suggest will affect and form the Western markets in terms of consumer preferences and values, industry actors and innovation grounds. The thesis also holds essential implications for theory and management practice.

Keywords: Reverse Innovation; Frugal Innovation; MNE; Innovation Diffusion; Emerging Markets; Developed Markets; International Business Strategy

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BRIC – Brazil, Russia, India, and China

FMCG – Fast Moving Consumer Goods

GNI – Gross National Income

GNP – Gross National Product

LFC – Leverage Freedom Chair

MNE – Multinational Enterprise

NGO – Non-Governmental Organization

NPO – Non-Profit Organization

R&D – Research and Development

GLOSSARY

Innovation – In our thesis, we adopt Porter's (1990) definition of innovation, stating that innovations can either mean new product designs, new production processes, or a new marketing approach.

Reverse Innovation – An innovation that is developed for emerging markets and later diffused to developed markets.

Frugal Innovations – Low-cost, tough and easy-to-use products or services that are developed with minimal amounts of material.

Multinational Enterprise – An enterprise, which operates in terms of facilities or assets in one or more markets other than its home country. We separate MNEs from NGO, NPO and Start-Ups.

Product – A product is an item offered for sale. In our thesis, product includes both the definition of an item and a service, physical or virtual.

Developing market – Poor and agricultural countries that are seeking to become more advanced both socially and economically. The World Bank defines developing countries as countries with a gross national income of USD11,905 or less (ISI, 2015), e.g. Kenya and Guatemala.

Emerging market – An economy with low to middle per capita income in the process of rapid growth and industrialization, e.g. China and India.

Developed market – A market with a relatively high level of economic growth and security, e.g. the US and UK. Also characterized by an advanced infrastructure relative to other less industrialized nations.

Middle Class – McKinsey (2013) defines middle class as individuals with a yearly income between USD9,000 and USD34,000.

Bottom of the pyramid – The largest, but poorest socio-economic group. The bottom of the pyramid globally consists of almost four billion people, who live on less than USD2.50 per day.

Top of the pyramid – The highest social class, who enjoys modern day infrastructure and technology.

1 Introduction

"For decades, GE has sold modified Western products to emerging markets. Now to preempt the emerging giants, it's trying the reverse"

– Immelt, CEO of General Electric 2009

1.1 Emerging Markets as a New Innovation Source

In search for growth and expansion opportunities, emerging markets have lately become a hub of global innovations for multinational enterprises. Some of these novel business models and innovations that originally targeted the emerging-market consumer suddenly successfully diffuse into Western markets. These so-called "Reverse Innovations" have the potential to shift the fundamental global landscape of innovations and power. Furthermore, they pose significant challenges for the strategy, design and management of Western multinational companies. (Sarkar, 2011)

1.2 Background of Reverse Innovation

Recently, cases have been brought up in which innovations that primarily targeted the emerging market, disrupted the mass market of developed markets. General Electric (GE) innovated a portable ultrasound machine that specifically targeted the rural low-end market of India, and which later was sold in the US, where it revolutionized the market by offering new uses through the portability and compactness of the device. Six years after the launch, portable ultrasound machines were a USD278 million global product line for GE. (Immelt et al., 2009) Usually, innovations diffuse from developed countries into emerging countries (Vernon, 1966; 1979). Furthermore, they go from the top of the pyramid (high-end market) to the bottom of the pyramid (low-end market) (Rogers, 1962). In the case of GE, though, the innovation started out in an emerging market and diffused into a developed market. Additionally, the innovation initiated a strategic change of the company, i.e. GE started to develop products for emerging countries, specifically for the bottom of the pyramid customers in those countries. This new phenomenon is described as Reverse Innovation. These innovations can span from new technologies and financing, to new business models.

The roots of Reverse Innovation reach back to the reform and opening up of China (and correspondent emerging markets) in the late 1970's. This invited the developed world's enterprises to exploit the emerging markets' low cost labor force by starting to outsource their production to China and India. As their population reached a higher employment rate, the

emerging markets started to increase their consumption and gained purchasing power. At the same time, companies began to realize that developed markets became increasingly saturated (London & Hart, 2004): The average annual GNP per capita of Europe between 1985 and 1995 declined by 3.5%, whereas simultaneously East Asia's and the Pacific's average annual GNP per capita grew by 7.5% (World Bank, 2001). This trend continued over the years, and between 2000 and 2012, China increased its GNP by 10.6% annually, while the US and UK only grew by 1.7% and 1.5% respectively (World Bank, 2014). Hence, with a saturated home market, developed-market MNEs increasingly tried to tap into emerging markets such as China and India for further revenue growth (London & Hart, 2007). *See Appendix II for more information about China's economic emergence and the forecasted development of specific emerging countries compared to the US.*

When China and other emerging markets opened up for business, not only did developed-market companies enter, but also native companies began to emerge and explore both the home market and developed markets. As a consequence of Western world's production outsourcing, emerging countries gained important know-how that eventually made them experts of efficiency and economies of scale (Hang et al., 2010). Today, China and India are viewed as leaders in the field of low-cost innovations for the mass market (Adriaens et al., 2013). To utilize this know-how, many Western companies today try to be part of the emerging innovation hubs and in 2010 more than 1,000 MNEs operated R&D facilities in China (McKinsey, 2010). As a consequence, one can observe an increased amount of low-cost innovations developed for emerging countries both from emerging-country companies as well as Western companies.

1.3 Problem area

The opportunities in emerging markets recently have also gained attention within Academia and renowned business journals, such as The Economist or Harvard Business Review. Especially the emerging countries China and India received increased attention in the literature (cf. Hart & Christensen, 2002; Brown & Hegel, 2005; Immelt et al., 2009; Prahalad & Mashelkar, 2010; Zeschky et al., 2011; Tiwari & Herstatt, 2012; Agnihotri, 2014). According to Immelt et al. (2009), success in emerging countries "is a prerequisite for continued vitality in developed ones". To be more precise, it is vital for the survival of international companies, as there will be emerging-market companies that eventually take their market share globally (Brown & Hegel, 2005; Immelt et al., 2009). Already, researchers have observed an increasing number of emerging-country companies that enter Western markets with low-cost innovations and that are

able to grab significant market share away from established Western companies (Mathews, 2006; Hang et al., 2010). Moreover, the Economist published a special issue titled "The World turned upside down" that describes the new rivalry between emerging- and developed-market companies with respect to business innovations (The Economist, 2010a).

With this in mind, it seems as though managers from developed-market companies need to rethink their own innovation approaches, in order to compete against low-cost innovations coming from emerging-market companies (Brown & Hegel, 2005; Williamson & Zeng, 2009; Williamson, 2010; Rao, 2013; Zeschky et al., 2014). The prevailing international strategy so far has been a Glocalization approach, i.e. companies develop their products at home and then distribute them worldwide, with some adaptations to local conditions. However, with this innovation approach, Western companies were only able to attract the high-end segment of emerging markets. (Immelt et al., 2009; Govindarajan & Trimble, 2012a) This begs the question of how to reach the largest customer segment in emerging markets, i.e. the bottom of the pyramid and emerging middle class. The new phenomenon of Reverse Innovation has recently been successful in attracting both low-cost consumers in these segments and even consumers in developed markets. Therefore, it seems essential that companies involved in international businesses familiarize themselves with the strategy of Reverse Innovations.

Yet, surprisingly little is known about the international business strategy of Reverse Innovation, i.e. the research about the phenomenon is almost non-existent. However, behind the background that those innovations are able to affect an entire, established Western industry and could even lead to a change in customer behavior, as in the case of GE, it seems crucial to analyze the underlying factors of the phenomenon and the characteristics that make those Reverse Innovations so successful. Furthermore, we also observe that the dominant paradigm of international innovation diffusion (Rogers, 1962; Vernon 1966, 1979) is contradictory to the new phenomenon of Reverse Innovation. In the case of Reverse Innovation, the innovations diffuse from emerging countries into developed countries (instead of the other way around). Therefore, we strive for an update of the paradigm of international innovation diffusion that includes the phenomenon of Reverse Innovation.

1.4 The Purpose of the Study

Previous research in the field of Reverse Innovation has been limited in two ways: First, it lacks a broad outlay of cases and rich cross-case analyses. Therefore, there is little empirical insight into the company-internal processes related to Reverse Innovations and the general

characteristics of the respective innovations. Second, existing research in the field does not include a linking to current theories of innovation and innovation diffusion. Yet, in order to make a meaningful analysis about Reverse Innovations, we believe it is important to provide a strong theoretical framework within which the new trend can be interpreted.

The main purpose of this study is therefore to explore cases of Reverse Innovation in order to gain a deep and broad understanding of the new phenomenon. The sub-purpose of this study consists of providing an empirical-based overview of the general characteristics of Reverse Innovations, and of identifying the underlying market dynamics and company-internal motives and processes related to the concept of Reverse Innovation. In addition, this thesis aims at extending existing research by adding a theoretical and conceptual perspective, in order to increase the theoretical understanding of the concept. To the best of our knowledge, this is the first study that delivers such a comprehensive view, in terms of both theoretical and empirical depth, on the concept of Reverse Innovation.

In order to fulfill the purpose of gaining a deep and broad understanding of the new phenomenon, three main questions will be answered throughout this study:

(1) What are the characteristics of Reverse Innovations?

(2) Why do companies engage in Reverse Innovation?

(3) How is Reverse Innovation performed within the company?

1.5 Limitations and Prerequisites

Throughout our pre-study of the phenomenon, we found that some researchers in the field of Reverse Innovation included innovation cases in their field study, that are about to be reversed, but have not at the time been diffused into developed markets yet. To correctly follow the definition of Reverse Innovation, we chose to only include innovation cases that fully completed its diffusion of the innovation into one or more developed markets. Thus, this serves as the only prerequisite of our research.

Because the strategy of Reverse Innovation has only been explored within the last decade, there is a limit to the amount of innovation cases found to include in our research. Thus, our analysis and implications are limited to the 23 cases found and identified as Reverse Innovations. With respect to these cases, we did not put particular focus on a specific industry or country of origin.

Instead, we included all cases that we found fit the prerequisites and that had sufficient information available.

1.6 Definition of market categories

The field of Reverse Innovation is quite complex, which makes the understanding of the differences among the market categories a necessary prerequisite. In the following we provide definitions of the three universally known market categories. We advise the reader to become familiar with these to successfully grasp the content. Furthermore, we expect the reader to be familiar with the field of international business strategy. *For further definitions, please refer to the full glossary in the pre-section VIII.*

1.6.1 Developing Markets

"Developing markets" are poor and agricultural countries that are seeking to become more advanced, both in a social and economic context. The World Bank defines developing countries with a GNI of USD11,905 or less (ISI, 2015). In our thesis, we focus on the Reverse Innovation from emerging to developed markets. However, some of the cases include involvement with developing markets as well, which provides extreme angles of the phenomenon.

1.6.2 Emerging Markets

The term "emerging markets" dates back to 1981 when Antoine van Agtmael (manager at the World Bank) defined emerging markets as an economy with low to middle per capita income. Furthermore, those markets are characterized by rapid economic growth and industrialization. They constitute approximately 85% of the global population, and represent about 20% of the world's economies. (Agtmael, 2007) Some researchers include developing markets in the definition of emerging markets, however, because of its differences in resources and country infrastructure, we have chosen to separate the two markets. The markets that are seen to be the largest emerging markets today are China, Brazil, India and Russia (BRIC).

1.6.3 Developed Markets

Since there is no universal definition, we refer to "developed markets" as markets or countries with a relatively high level of economic growth and security. Such countries are also characterized by an advanced infrastructure relative to other less industrialized nations as well as a high standard of living. In 2013, the ten largest advanced economies by nominal GDP were the US, Japan, Germany, France, the UK, Italy, Canada, Australia, Spain and South Korea. (IMF World Economic Outlook, 2014)

1.7 Disposition

This thesis is divided into eight chapters, including: Introduction, Literature Review, Theoretical Framework, Methodology, Case Studies, Analysis, Conclusion, and Discussion.

After this introduction chapter, we provide a *review of previous research* within the field of Reverse Innovation, including an in-depth presentation of our main research questions linked with sub-questions. This chapter is further followed by a *theoretical framework* of the paradigms and theorems linked to the phenomenon of focus. Then, an outlay of the *research method* used to conduct the research will be provided, which focuses on the sampling strategy cases included in this study as well as the quantitative data collection method. Furthermore, the fifth chapter, *empirical evidence (case studies)*, presents a table of 23 Reverse Innovation cases we found during our research period, followed by four in-depth case studies. The empirical findings will then be analyzed to provide answers to the three main as well as sub-research questions. The main result of the study is presented in the chapter *conclusion*, followed by a *discussion*, which results in managerial and theoretical implications, as well as general reflections, methodical reflections, and lastly, suggestions of future research within the field of Reverse Innovation.

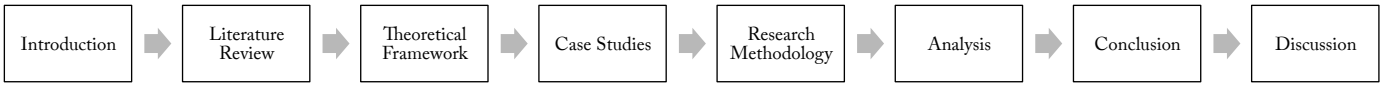

Figure 1 - Illustration of thesis outline

2 Literature review

This review first broadly introduces the phenomenon of Reverse Innovation. It will then provide an insight into past research methods used to study this phenomenon. Furthermore, this review gives a detailed overview of the findings and suggestions of previous research within the field. Lastly, our research agenda is presented together with the main- and sub-research questions.

2.1 Definition of Reverse Innovation

The concept and definition of Reverse Innovation has been established by an article by Immelt et al. in 2009, in which the authors provide a definition for the term "Reverse Innovation" and contrast it to the strategy of Glocalization. For the CEO of General Electric (GE), Immelt, and his co-authors, Reverse Innovation means developing products in and for emerging countries like China and India, and then distributing them globally. GE developed two devices for emerging markets, a handheld electrocardiogram device and a portable ultrasound machine (selling for less than a fifth of the price of such machines in the US) that also had a disruptive impact in developed markets. (Immelt et al. in 2009) Their definition has subsequently been used by researchers in the field of Reverse Innovation (cf. Govindarajan & Ramamurti, 2011; Agnihotri, 2014; Zeschky et al., 2014; Dhillon, 2015).

Already in 2005, Brown and Hegel published the article "Innovation Blowback: Disruptive Management Practices from Asia", in which they describe the evolving threat coming from emerging-market companies by offering innovative, globally traded goods and services at a new price performance level, therefore having a disruptive impact on the US or European markets. This description can be seen as equivalent to the term of Reverse Innovation, however limiting the phenomenon to emerging-market companies only.

2.2 Approach towards exploring Reverse Innovation

2.2.1 Empirical Approach

Many researchers in the field of Reverse Innovation focus on using case studies to explain the new concept (cf. Khanna & Palepu, 2006; Sehgal et al., 2010; Govindarajan & Trimble, 2012a; Govindarajan, 2012; Zeschky et al., 2014; Agnihotri, 2014; Dhillon, 2015). However, oftentimes, those case studies are only superficial and in limited number so that they do not allow a comprehensive view on the characteristics or types of innovations that become Reverse Innovations, the development process of the innovation, the choice of taking it into developed markets, and the resulting impacts on the developed markets. What makes some research

studies about Reverse Innovation misleading is that they sometimes even chose examples that cannot be described as Reverse Innovations, as they have not been transferred into developed markets yet (cf. Govindarajan & Ramamurti, 2011; Govindarajan & Trimble, 2012a; Zeschky et al., 2014; Dhillon, 2015). Furthermore, there are also some articles that speak about cases of Reverse Innovation but do not title it as such (cf. Hart & Christensen, 2002; Zeng & Williamson, 2003; Williamson & Zeng, 2009; Williamson, 2010; Sehgal et al., 2010; Kachaner, 2011; Zeschky et al., 2011; Tiwari & Herstatt, 2012). The reason for this might be that those articles were written either before or at the same time of the establishment of the phenomenon's name by Immelt and his co-authors in 2009.

2.2.2 Theoretical Approach

So far, the literature has not provided a comprehensive theoretical framework that could help understanding the phenomenon of Reverse Innovation. Some studies try to differentiate Reverse Innovation from other low-cost concepts. Agnihotri (2014) gives a short introduction in the diffusion of innovation theory. However, he puts the focus on low-cost innovations in general and does not go into depth in explaining the theory. In addition, he neglects to apply the theory to Reverse Innovation.

2.3 Relationship between Reverse Innovation and other Innovation Concepts

In the literature about Reverse Innovation, it is quite common to involve the concept of disruptive innovations (cf. Hang et al., 2010; Govindarajan & Ramamurti, 2011; Corsi & Di Minin, 2011; Sarkar, 2011). Unfortunately, there are some studies that mix up the two concepts of reverse and disruptive innovations or do not provide distinctive definitions for the two separate concepts. Hang et al. (2010) for example, define Reverse Innovation as a disruptive product that is initially targeted at emerging markets but is taken global over time. However, a Reverse Innovation might not necessarily have to be disruptive. Govindarajan and Trimble (2012a) stress that a Reverse Innovation can either aim at marginalized markets or the mainstream market in the developed market. Having a Reverse Innovation that targets marginalized markets means targeting niche markets in the developed countries that have customers with similar needs in the mass market of emerging countries. However, a Reverse Innovation that is embraced by the mainstream market is able to close a need gap in the mass market of the rich world, thus having a disruptive impact on the existing market. (Govindarajan and Trimble, 2012a)

Some scholars view Reverse Innovation as a subcategory of low-cost innovations (cf. Sehgal et al., 2010; Kachaner et al., 2011; Agnihotri, 2014). According to Williamson (2010), these low-cost innovation strategies could be regarded as a new generic strategy in a competitive environment. Williamson perceives this strategy to challenge the two generic strategies of differentiation and focus. With respect to Porter (1985), differentiation implies the introduction of new technology, or offering more choices or customization. Focus means targeting a niche market with a specialized offering. Both strategies aim at customers that are willing to pay a price premium for the additional benefits or features. Low-cost innovation, on the other hand, means offering (global) customers dramatically more utility for (dramatically) less money. Oftentimes, companies involved in low-cost innovations offer customers both high technology at low cost and also have a great product variety (Williamson & Zeng, 2009; Williamson, 2010).

2.4 Organizational Design to enable Reverse Innovation

Sarkar (2011) tries to illustrate the bigger picture when it comes to the effects of Reverse Innovation on MNEs. According to the author, there will be a growing reverse flow of not only innovations but also knowledge from emerging markets. That is why MNEs need to be open towards learning from emerging-market firms through reverse knowledge spillovers. Additionally, Sarkar states that MNEs need to create an entirely new ecosystem that advocates creating products and services for emerging markets, which also have the potential to be sold in developed countries. The question is how such a reinvention of the MNEs could look like and how to structure a global organization in order to capture such knowledge spillovers.

Immelt et al. (2009) provide a first suggestion to answer this question. They stress the importance of the local growth team model (independent cross-functional teams that function like start-ups and are encouraged to generate radical change) in order to create an environment that encourages Reverse Innovations within the MNE. In the same manner, Hart and Christensen (2002) mention the need for companies to manage product development for emerging markets independently from the processes and values of their mainstream global businesses. Also partnering with local companies and nongovernmental organizations could be helpful in capturing opportunities and local knowledge spillovers (Hart & Christensen, 2002; Williamson, 2010; Agnihotri, 2014). Another common strategy of MNEs is to establish local R&D centers in emerging countries like India or China (Sehgal, 2010; Zeschky et al., 2011; Agnihotri, 2014). According to Williamson (2010), there are also some companies that change

the reporting structure by putting people from their emerging countries divisions, like the head of the Chinese division, on to the board of directors.

Zeschky et al. (2014) investigate how Western MNEs of the healthcare and electronics industries organize their international R&D for Reverse Innovation. Based on four case studies, the authors found that in all the four cases, the Reverse Innovations emerged from frugal innovations aiming at the resource-constrained customers in emerging markets. With respect to the organization of R&D, it has been observed that the location of the global product mandate, i.e. whether the strategic product and market decisions is made in the headquarters or in the emerging-country subsidiary of the Western MNE, is no predictor for the successful development of Reverse Innovation. Yet, in order to generate successful Reverse Innovation, it has shown crucial that the headquarters is willing to provide the subsidiary access to extant technological know-how and knowledge about target markets. In addition, the headquarters must be willing to accept some degree of product cannibalization due to the low-cost product. Another interesting insight from this research is that native people from emerging markets have carried out the actual product design and the physical product development of the Reverse Innovation in the local (emerging-market) subsidiaries. (Zeschky et al., 2014) Thus, it seems that local people tend to better understand the needs and demand of emerging market customers. Therefore, the authors come to the conclusion that in order to generate an environment for successful Reverse Innovations, MNEs should establish an R&D unit in an emerging market that exposes engineers to the severe living conditions of poor customers.

2.5 Untested Hypotheses and Research Agenda

In a paper that was published in 2011, Govindarajan and Ramamurti focus on the question why innovations might trickle up from emerging to developed markets. They come up with five different hypotheses, that have remained untested: (1) there are poor people in rich countries that favor "good enough" products at a very low price; (2) the redesigned, ultra-low price products might increase the overall market demand in developed countries; (3) the new features of the product might create new market segments in developed countries; (4) the technology of the "good enough" product might improve over time so that it also satisfies high-end users in developed countries; and (5) emerging markets might leapfrog to latest technologies, therefore being at the forefront of global innovations.

The authors further tap into the question of why companies from emerging markets might have a competitive advantage when it comes to Reverse Innovations. They propose that reasons

might be their deep understanding of the needs of local customers, strengths in ultralow cost design and manufacturing, and less internal resistance and bureaucracy when it comes to international expansion. However, those being hypotheses, Govindarajan and Ramamurti (2011) did not test them further.

Govindarajan and Ramamurti (2011) also point out that examples of Reverse Innovations are still rare. However, they believe that "more research and case studies are needed to establish the true extent of Reverse Innovation and its future potential". That is why they propose the following research agenda:

(1) What kinds of innovations will emerging markets spawn?
(2) Why now and not earlier?
(3) Why might innovations 'trickle up' from poor to rich countries?
(4) What are the competitive advantages of emerging-market firms?
(5) How do emerging-market MNEs and developed-market MNEs compete in the diffusion of Reverse Innovations?
(6) How does Reverse Innovation affect the Glocalization strategy of developed-market MNEs?
(7) Can developed-market MNEs pursue Glocalization and Reverse Innovation at the same time?
(8) Who learns from whom and why, when emerging-market MNEs and developed market MNEs come into contact in different markets?

2.6 Conclusion of the Literature Review

With regard to existing literature, it can be summarized that research in the field of Reverse Innovation is still at a very early stage. A common definition of the term Reverse Innovation has already been established. However, there is still some confusion about its link to other concepts like disruptive innovations or low-cost innovations. Therefore, we want to shed light on the relationships between the innovation concepts by analyzing existing cases of Reverse Innovations. With respect to extant research about Reverse Innovation, it has so far only focused on risks and opportunities of Reverse Innovation for developed-market MNEs and the impacts on their organizational structure. Latest research investigated the impact of the R&D location on Reverse Innovations. Still, extant research in the field of Reverse Innovation has so far, for the most part, merely described the phenomenon. Thus, we go one step further by analyzing and investigating the underlying external factors and company internal motives and processes related to the concept of Reverse Innovation.

2.7 Research Questions

For the purpose of getting a deep and broad understanding of the new phenomenon, we decided to focus throughout our thesis on three main research questions:

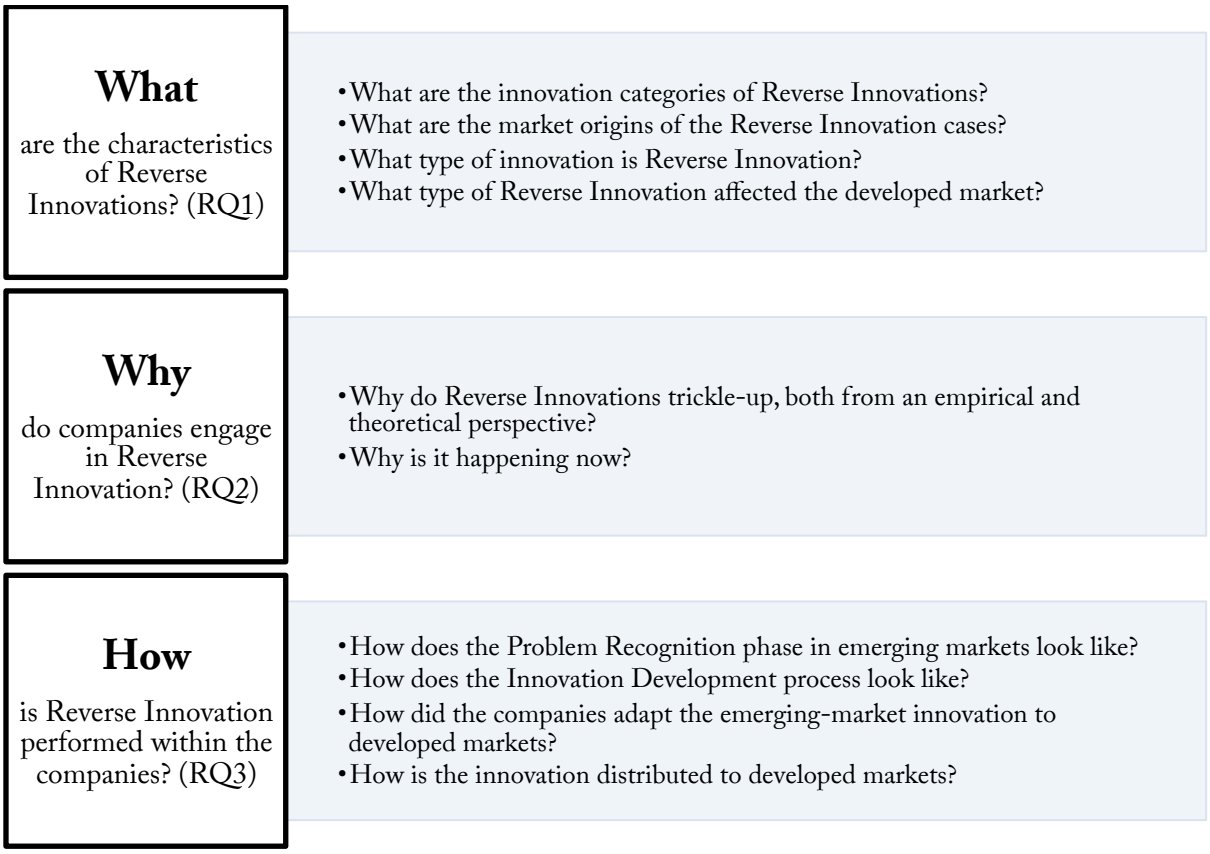

Figure 2 – Main- and sub-research questions

First, the thesis provides a characterization of Reverse Innovations cases that were found over the research time period. We present different categories in how existing Reverse Innovations might be divided. This would specify Govindarajan and Ramamurti's (2011) research agenda question (1) in the way that we specifically look at Reverse Innovations cases in emerging countries. We also explore if there is a clear-cut way in categorizing Reverse Innovations or whether it is not that straightforward. This research question will further investigate Govindarajan and Ramamurti's (2011) research agenda question (4) and (5), by exploring if there are any strengths or advantages of companies originating from emerging markets or developed markets with respect to Reverse Innovation. This question also examines the impact on the Reverse Innovations on the developed-country's market.

Second, we focus on the question of why the specific companies engage in Reverse Innovations, thus why they take the product to developed markets. This part includes question (2) and (3) of Govindarajan and Ramamurti's (2011) research agenda. It has shown that Reverse Innovation

seems to be a current phenomenon, but this begs the question of why it has not happened earlier. Furthermore, we investigate the reasons for why, contradictory to existing theory, innovations trickle up. Govindarajan and Ramamurti (2011) already provided some hypotheses, however, we use existing conventional theory as well as case studies to further analyze the phenomenon.

Third, we explore how Reverse Innovations are performed within the companies. Thus, we investigate the processes within the companies that resulted in the development of Reverse Innovations in order to provide a better understanding of the emergence of the concept. For that purpose, we explore why the companies began to innovate for the emerging markets in the first place, and what approach they chose to diffuse the innovation into the developed countries. This will further lead to answering of Govindarajan and Ramamurti's (2011) research agenda questions (6) and (7).

That being said, we will not include Govindarajan and Ramamurti's (2011) research agenda questions number (8). This question focuses on strategic and organizational issues of developed-country MNEs and foreign direct investment spillovers, which we consider as a second very broad topic. Therefore, answering this question could be the purpose of future research.

By answering these questions, we are contributing to existing literature by providing a broad empirical description as well as comprehensive theoretical framework that could help in creating a deeper understanding of the phenomenon Reverse Innovation.

3 Theoretical Framework

This chapter provides an overview of the theoretical framework, within which Reverse Innovation can be placed. First, it provides a more comprehensive definition of the concept, and describes its emergence within the field of international business strategies. Second, important innovation paradigms will be explained, which include current definitions of innovation, innovation diffusion theory, and different innovation concepts that can be linked to Reverse Innovation.

3.1 The Concept of Reverse Innovation

As mentioned, Reverse Innovations originally target customers in emerging countries, usually people at the bottom of the pyramid (BOP) or the emerging middle class. As those consumers' annual capital income only amounts to about USD1,500, these innovations have an extraordinary low price, usually 1-5% of the respective developed-market price. However, the customer segment is huge in volume (almost four billion people, two-thirds of the world's population). Therefore, the companies serving that segment can achieve huge economies of scale. (Prahalad & Hart, 2002) Besides that, the segment is very open for technological innovations and innovative business models, as it does not have access to existing technologies due to their high price or complexity (Immelt et al., 2009). Hence, serving this market segment creates a competitive advantage for the company conducting it. Due to various reasons that we will investigate, the innovations described take an unusual way in the process of innovation adoption: they "trickle-up" and spread into the developed market. This is why Immelt et al. (2009) use the word "Reverse". In contrast to Rogers' (1962) process of innovation diffusion in which innovations trickle down from the highest to the lowest social class, those innovation go the reversed way.

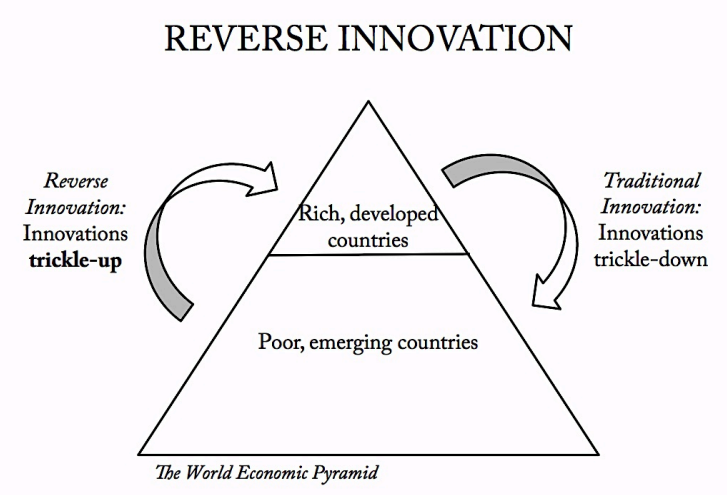

Figure 3 - Reverse Innovation vs. Traditional Innovation (Source: Govindarajan & Ramamurti, 2011)

3.1.1 The Evolution of Reverse Innovation

According to Govindarajan (2009), Reverse Innovation is the next step in the international business strategy process. The global companies' business strategy has gone through a couple of shifts the last three decades. Levitt (1983) was the first to state that the world's needs and desires have become homogenous, thereby heralding the era of Globalization and global companies. International corporations started to sell standardized products around the world. Forces that facilitated this development have been the advancement in technology, the growth of international communication channels, and the emergence of the Internet (Theodosiou & Leonidou, 2003). The main focus of corporations was to produce standardized goods of the best quality and reliability at the lowest price for global market segments, thereby achieving economies of scale (Levitt, 1983).

Later, it has been argued that there are too many variations in consumers' tastes, cultures and traditions, and in the stage of technological development, which made it necessary to adapt the product offering to the foreign market (Theodosiou & Leonidou, 2003; Rugman & Verbeke, 2004). This so-called Glocalization approach therefore reflects a global strategy approach but also recognizes the necessity for local adaptions. There is a balance between standardization and adaption (Svensson, 2001; Ricart et al., 2004). Some researchers refer to this approach as the "integration-responsiveness framework": According to Roth and Morrison (1990), there are simultaneously pressures for global integration that strive for the integration of activities across borders, and pressures for local responsiveness, asking for local context-sensitive decisions. What could have been observed, though, is that large MNEs tended to almost always develop and design new products and services for the home and developed markets first and foremost (Govindarajan, 2009). As a result, those products only served the top of the pyramid customers in emerging countries with a purchasing power similar to the one in developed countries (Ricart et al., 2004).

Now, during the last couple of years, there have been cases in which there has been a radical shift in the way products are developed and designed. As the markets of the developed countries have become saturated, MNEs realized the potential of the buying power of emerging countries like China or India (Immelt et al., 2009; Govindarajan & Trimble, 2012). Instead of just selling their cheapest product or reducing features to make an existing product cheaper for the emerging-market customers, the R&D departments designed new and innovative products from scratch, focusing on the low-cost aspect of the product instead of over-engineering it (Immelt et

al., 2009). However, also consumers in developed countries showed a demand for the same products. That is why many MNEs started to bring those products back in the developed markets, i.e. the Reverse Innovation strategy. Yet, it is not only the big developed-market companies that pursue this strategy: With their low-cost business models, innovative ideas, and the help of technology, also companies from emerging markets have realized their potential in serving this kind of customer segment (Hang et al., 2010).

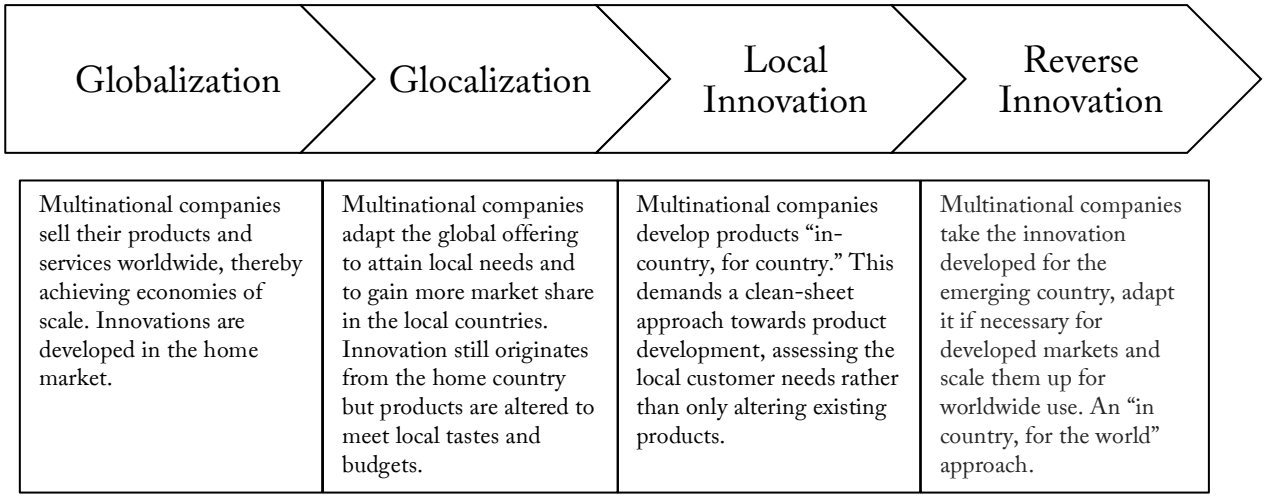

Figure 4 - The evolution of Reverse Innovation (Source Govindarajan, 2009)

3.2 Innovation

In order to establish a comprehensive framework about the concept of Reverse Innovation, we will first provide a clear definition of the term innovation, as it is considered as the super-ordinated category of Reverse Innovation. Furthermore, we will describe the process of innovation diffusion and characteristics that facilitate innovation diffusion, both with respect to the innovation itself and the person adopting it. We will finish this section with describing the innovation diffusion process across different countries, which is most relevant in the context of explaining the phenomenon of Reverse Innovation.

3.2.1 Definition of Innovation

There are hundreds of different definitions of innovation in the literature. The most famous and influential definition comes from Schumpeter (1912; 1934) who divided innovation in five different types: (1) launch of a new product; (2) application of new methods of production or sales; (3) opening of a new market; (4) acquiring new sources of supply of raw material or semi-finished goods; and (5) implementation of a new form of organization. Barnett (1953) perceives innovation as something much broader, i.e. "any thought, behavior, or thing that is new because

it is qualitatively different from existing forms". Rogers (1962) broadens the definition of innovation even further by referring to it as "an idea perceived as new by the individual" (Robertson, 1967). For our thesis, we adopt Porter's (1990) definition, stating that innovations can either mean new product designs, new production processes, or a new marketing approach. Yet, in his view, most innovations are rather "mundane and incremental, depending more on an accumulation of small insights and advances than on a single, major technological breakthrough".

In general, innovations can be classified into three different categories (Robertson, 1967):

Continuous Innovations	*Dynamically Continuous Innovations*	*Discontinuous Innovations*
• Alteration of the product rather than establishing a new product	• Higher disruptive effect on established patterns • Alteration of product or establishing a new product	• Establishing a new product • Establishing new behavior patterns

Figure 5 – Innovation categories (Source: Robertson, 1967)

3.2.2 Innovation Diffusion

Traditionally, innovation diffusion has been referred to as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 1962). More recent literature has extended the definition of social system by referring to innovation diffusion as the spread of innovation in a market (Peres at al., 2010). As pointed out by Rogers (1962), there are five characteristics of innovation that consistently influence the adoption of a new product or service:

Relative Advantage	*Compatibility*	*Complexity*	*Observability*	*Triability*
The degree to which an innovation is perceived as being better than its precursor, often related to economic profitability or social status giving	The degree to which an innovation is perceived as consistent with the existing values, needs, and past experiences of potential adopters	The degree to which an innovation is perceived as difficult to understand and use	The degree to which the results of an innovation are observable to others	The degree to which an innovation may be tried out or experimented with before adoption

Figure 6 - Innovation characteristics (Source: Rogers, 1962)

Furthermore, consumers can be divided into different categories based on the time they adopt a specific innovation. This is referred to as *"innovativeness"*, i.e. "degree to which an individual or other unit is relatively earlier in adopting new ideas than other members of the social system" (Rogers, 1962). *Innovators* are the first to adopt an innovation. They are very eager in trying out new ideas, possess substantial financial resources and have the ability to understand complex technical knowledge. The next adopter category is the *Early Adopters*. They successfully and discretely use new ideas and are therefore the opinion leaders and role models in their social system. The *Early Majority* adopts innovations right before the average consumer. Their decision process to adopt an innovation takes relatively longer compared to the earlier mentioned categories. The *Late Majority* is more skeptical in adopting new products. The adoption may be out of economic necessity or increasing network pressure. This innovativeness category has relatively scarce resources and therefore waits until almost all their social peers have tested and adopted the innovation. The last category in the adoption process is the *Laggards*. (Rogers, 1962)

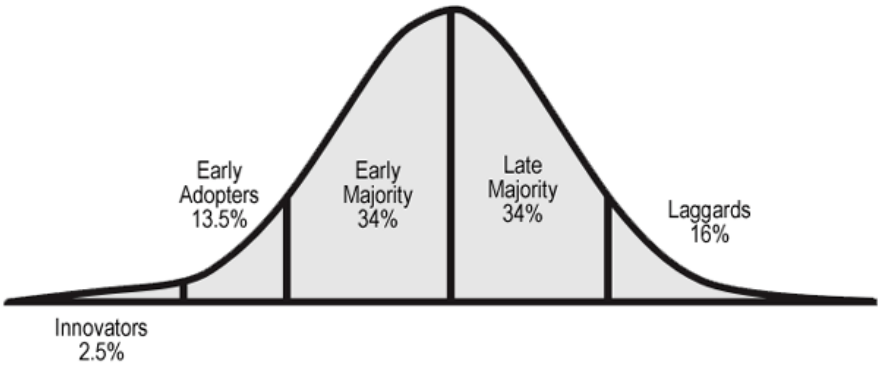

Figure 7 – Innovation life cycle (Source: Rogers, 1962)

3.2.3 Innovation Diffusion between Geographically Different Markets

In the original product cycle hypothesis, Vernon (1966) suggests that companies develop, produce and distribute new products first in developed markets before exporting them to less developed countries. It is only later in the product cycle that the company shifts the production of the innovation into developing countries due to standardization and low labor costs (standardized product stage). Furthermore, Vernon (1979) points out that after the adoption of the innovation in the home market (new product stage), companies introduce their innovations first in markets that are familiar to them with respect to culture and language (maturing product stage). This would imply that innovations are first introduced in developed markets before diffusing into emerging markets.

Vernon's hypothesis is in the same line with scholars suggesting that innovation diffusion across countries occurs according to the *Waterfall* model, i.e. innovations trickle-down from the most to the least technological advanced countries. This implies that companies first introduced the innovation in developed countries before entering less developed or emerging countries. In general, the *waterfall diffusion strategy* refers to a diffusion strategy in which the markets are entered sequentially. The opposite approach is called *sprinkler diffusion strategy*, which implies that companies introduce the product globally right from the start. (Kalish et al., 1995)

Other research stresses the importance of communication between the lead and the lag market (Takada & Jain, 1991; Kalish et al., 1995). In line with this research, Peres et al. (2010) share the opinion that the diffusion of innovation across markets depends on two mechanisms: weak ties and signals. Weak ties describe the communication of adopters in one country with non-adopters from another country. Signals mean that a high level of acceptance of the innovation in one country positively influences consumption in another country by reducing the level of risk and increasing the legitimacy to use the innovation. (Peres et al., 2010) However, as the developed and emerging markets are rather different in their culture and communication, one could argue that the innovation adoption across those countries would be done reluctantly (Takada & Jain, 1991).

In a more recent study, Beise (2004) introduced the lead market concept of developing global innovation. This theory seems more applicable in the context of Reverse Innovations. A *lead market* refers to the market in which the innovation is first widely accepted and adopted. The innovation is triggered by local demand preferences and local environmental conditions. Over time, as the environmental characteristics of other regions resemble the ones that triggered the adoption of the innovation in the lead market, the innovation diffuses into those other markets, called *lag markets*, as well. The factors changing the environment can be the following: (1) The price of the innovation decreases in the lag market, (2) the perceived customer benefits for users in the lag market increase, or (3) the available budget of the consumers in the lag market increases. (Beise, 2004)

3.2.4 Cost- and Frugal Innovations

As mentioned earlier, we have encountered some confusion in the literature about the distinction between "Reverse Innovation" and other low cost concepts, specifically "frugal innovation", and "cost innovation" (The Economist, 2010b).

According to Zeng and Williamson (2007) *cost innovation* is defined as a strategy that deploys the cost advantage of corporations based in emerging markets in "radically new ways to offer customers around the world dramatically more utility for less expenditure". For Agnihotri (2014) low-cost innovations do not have to be necessarily from corporations based in emerging markets. Rather, a low-cost innovation is any innovation that focuses on eliminating and reducing features of the product in order to minimize costs. The results are "good enough" products that suit the needs of the target market. Oftentimes, they are therefore especially user friendly and avoid being over-engineered. Because of their low cost, these innovations serve the most un-served and price sensitive segment. In order to achieve a low price, companies apply "target costing", i.e. the company sets the selling price and margin in advance. During the development process, target costing checks every point in the value chain in order to find innovative processes that could further reduce costs. (Agnihotri, 2014) Thus, *cost innovation* is not about low labor costs but reinventing the business model and its processes in the most cost-efficient way. The focus of these businesses is on volume, not margins (Zeng & Williamson, 2007; Williamson, 2010).

A special form of a (low-) cost innovation is *frugal innovation*. We define "frugal innovation" in accordance with Renault's CEO Carlos Ghosn, who referred to Tata Motor's frugal engineering practice as "doing more with less". To be more specific, frugal innovations are low-cost, tough and easy-to-use products that are developed with the minimal amounts of material (The Economist, 2010b; Rao, 2013). Frugal innovations are all born out of a situation of resource constraints and designed to meet the relatively basic needs of poor consumers and reducing the impact on the environment (The Economist, 2010b; Zeschky et al., 2011; Rao, 2013). The cost constraint is already built in the development process and is a pre-defined criterion (Rao, 2013). Rather than only reducing the features of an existing product, the process of frugal innovation involves building the new product from scratch, a so called "bottom-up" approach, i.e. breaking the complex product into basic components and then re-building each component in the most economic matter (Sehgal et al., 2010). Therefore, the resulting product is not of poor quality, but oftentimes uses cutting-edge technology (Tiwari & Herstatt, 2012; Rao, 2013). One should also mention that the focus on low costs is always accompanied by the focus on maximizing the

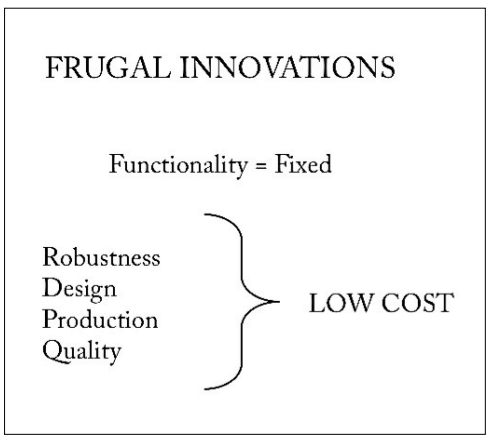

Figure 8 – Frugal innovation characteristics (Source: Rao, 2013)

consumer's value, i.e. increasing the functionality and utility of the product (Sehgal et al., 2010). Frugal engineering should not be mixed up with "*Jugaad Innovations*", i.e. quick improvised solutions to temporary problems (The Economist, 2012; Agnihotri, 2014).

To summarize, it can be inferred that every frugal innovation can be defined as a low-cost innovation, having a focus on resource constraints. Based on our analysis of the different types of Reverse Innovations that have emerged during the last couple of years, we will later in our thesis try to provide a general proposition regarding the connection between frugal, low cost, and Reverse Innovation.

3.2.5 Disruptive Innovations

Almost all scholars in the field of Reverse Innovation have linked and framed the phenomenon of Reverse Innovation with the disruptive innovation paradigm (Corsi & Di Minin, 2011). *Disruptive innovations* are defined as affordable, "good-enough" products that meet consumers' basic needs at a relatively low cost (Bower & Christensen, 1995; Christensen, 1997; Hang et al., 2010). Oftentimes, these innovations do not offer a wide range of features or the latest technology. That is why, at the time of its introduction, the innovation is not valued by the mainstream customer. Yet, it is innovative with respect to its low cost, small size, or simplicity of use, which makes it accessible and attractive for a lower-end market or niche market. (Hang et al., 2010) Over time, due to subsequent improvements with respect to attributes that mainstream customers value, the innovation also spreads into the mainstream market (Govindarajan & Kopalle, 2006). At some point, the innovation becomes disruptive in the sense that it replaces the existing technologies and causes, in most cases, the failure of incumbent firms (Corsi & Di Minin, 2011).

When it comes to bringing the two concepts together, one can say that a Reverse Innovation might also become a disruptive innovation. It is however essential to distinguish between the two markets involved. In the case of a disruptive Reverse Innovation, the innovation is first adopted in the mass market of the emerging market. In a developed-market view, this is corresponding to the characteristic of a low-end market. This is in contrast to the definition of disruptive innovations of Bower and Christensen (1995) not only a small group of customers but represents oftentimes the large part of the population of the emerging country that had no access to the established technology due to the high price or complexity (Corsi & Di Minin, 2011). The mainstream market, that the same Reverse Innovation disrupts, is located in the market of the developed country. We suggest that only when the mainstream market in the

developed country adopts the innovation and the innovation replaces the prevailing technology in that market, one should speak of a disruptive Reverse Innovation. If only a niche market in the developed country uses the new innovation, and/or the technology or business model is not disrupted, it is only a Reverse Innovation.

3.2.6 Market Innovation

In order to analyze how Reverse Innovations shape the market of developed countries, it is necessary to understand the concept of markets and market innovations.

Referring to Kjellberg et al. (2014), innovation processes have been recognized to have both a technical and a market dimension, whereas research tended to focus on the technical dimension of an innovation, rather than the market dimension. According to former literature, market innovation meant either embedding innovations into an existing market (without changing the market), or creating an entirely new market with the innovation. Yet, recent literature suggests that market innovation also includes changing existing markets. These markets can be changed by influencing market participants with respect to their preferences and evaluation of products. Thus, markets are not stable but an ongoing process. Therefore, market innovation can be referred to as "successful change of existing market structure, the introduction of new market devices, the alteration of market behavior, and the reconstitution of market agents". It is about "altering the way in which business is done". (Kjellberg et al., 2014)

3.3 Conclusion of Theoretical Framework

As has been shown in our theoretical framework, there are some theories that could contribute in developing a deeper understanding of the concept of Reverse Innovation. First, we observed that Reverse Innovation could be seen as the descendent of a process of internationalization of multinational companies. On the other hand, the concept is also part of the innovation paradigm. Therefore, the existing paradigms around innovation can serve as a basis for further investigating Reverse Innovation and its underlying mechanisms. *Figure 9* provides our analytical framework, i.e. an overview of how the theories used in our theoretical framework can be linked to each research question and its respective sub-questions.

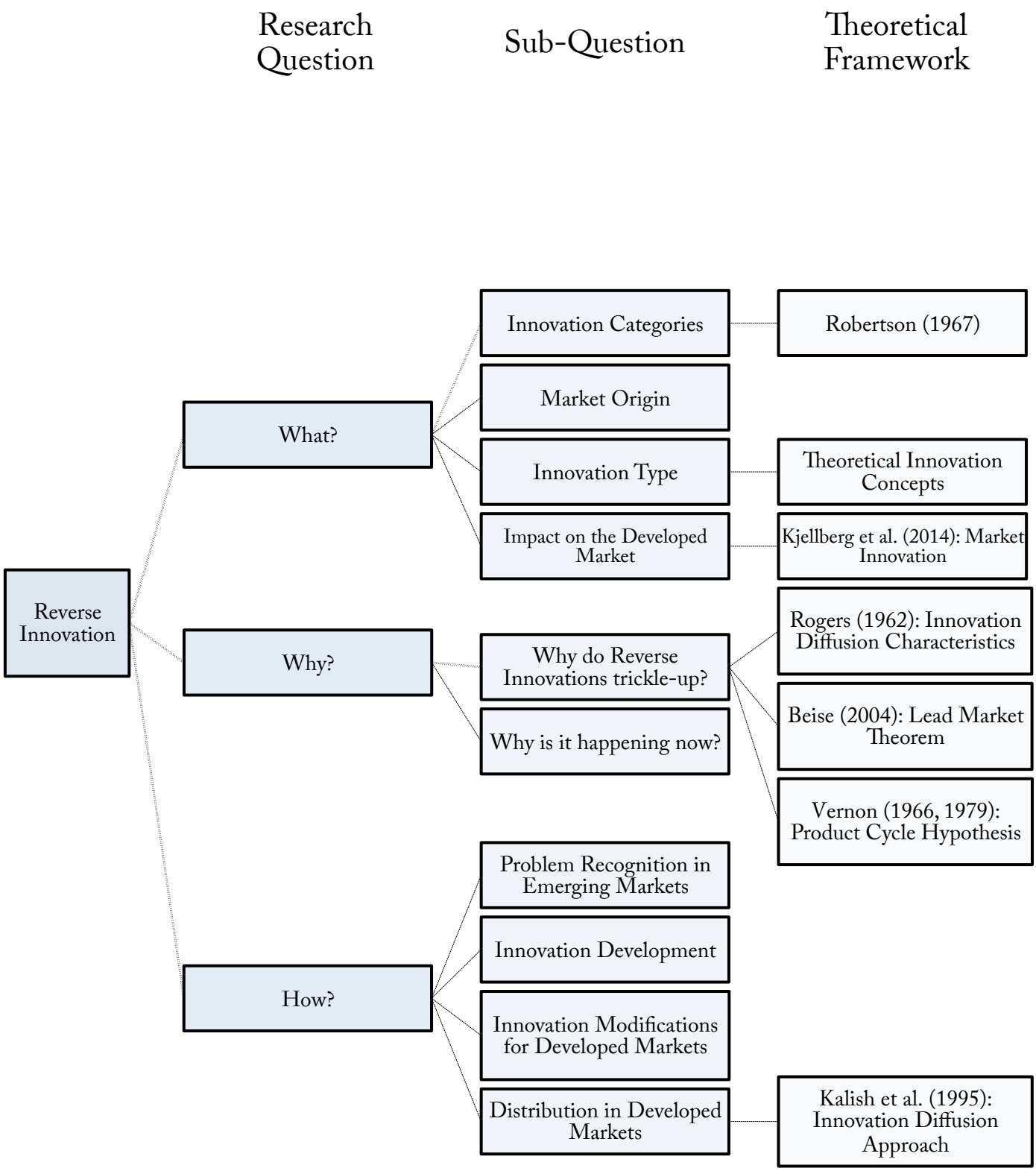

Figure 9 - Analytical Framework

4 Research Methodology

This chapter provides a description of the research method used in this study. Included in this chapter are the reasons for the chosen research design, a description of how cases were selected, and how data was collected and analyzed. This is followed by a discussion of the limitations of the method used and the study's validity and reliability.

4.1 Research design

4.1.1 Generating Theory

Due to Reverse Innovation being a new phenomenon with limited existing theory and empirical studies, our research aim was to generate theory rather than to verify existing theory. To generate theory, the approach of grounded theory, developed by Glaser and Strauss in 1967, was employed. Grounded theory is a detailed education of a phenomenon, derived from an intensively and detailed analysis of data, that is generated through interviews, documents or by constant comparison/observation, and which later is coded and explained - altogether producing a well-constructed theory (Strauss, 1987). To generate theory, we used an inductive, qualitative research approach, which was based on an outline of 23 cases and four in-depth case studies of both developed- and emerging-market enterprises. To support this approach, Gersick (1988) explains that when using a qualitative research approach, chances increase of finding the unexpected, which could lead to developing new insights and theory.

4.1.2 Case Studies

To generate theory from data, we used the approach of comparative analysis by comparing the four case studies internally as well as together, while also linking it to the existing theory of the environment and background of Reverse Innovation. Yin (2014) argues that "case studies are the preferred strategy when 'how' and 'why' questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context", which applies to our study of Reverse Innovation.

We believe current research of the phenomenon Reverse Innovation is insufficient to get a broad and deep understanding, as it so far has little validation in terms of theoretical frameworks being analyzed together with their empirical patterns. In situations like these, theory building from case study research is appropriate, since it does not rely on previous phenomenon literature or prior empirical evidence. Eisenhardt (1989) suggests that building theory from case study

research is most appropriate in the early stages of research on a topic, as in the case of Reverse Innovation.

Yin (1981) describes a case study as a research strategy that is linked to a history, an experiment, or a simulation. As a research strategy, it attempts to examine a modern-day phenomenon in its real-life context, especially when the boundaries between phenomenon and context are not obvious. Yin (1981) further distinguishes between a descriptive and an explanatory research strategy. In our research, the first refers to our research analysis question "how", and the latter to our research analysis question "why".

When writing each case study, a process developed by Eisenhardt (1989) was used, which included the steps shown in *Figure 10*. Throughout our research, we collected data, found patterns, and analyzed the specific case studies that we considered would help to generate as many perspectives on Reverse Innovation as possible.

Figure 10 - The process of writing a case study (Source: Eisenhardt, 1989)

Two of the strengths of using case studies as building theory approach, described by Eisenhardt (1989), is that (1) creative insights often arise from the collocation of inconsistent evidence, and (2) the likelihood of valid theory is high because the theory-building process is so closely tied with evidence that it is very likely that the resulting theory will be consistent with empirical observation.

4.2 Case Selection

When using the method of case studies to generate theory, we did not use statistical sampling of data (i.e. randomly gathering data as a sample of a population). Instead, a method of theoretical sampling was used, in which we acted as an active selector of theoretically relevant data. By using theoretical sampling we could discover categories and their most concrete patterns that could lead to developing a theory. (Glaser & Strauss, 1967)

Pettigrew (1988) suggests that because of the limited amount of cases available in generating a novel theory, one should choose cases with very different backgrounds to get a broad and

detailed understanding of the phenomenon. Further, Harris & Sutton (1986) explain that similarities, which are observed within a diverse sample of cases, offer a stronger grounding for a proposition, rather than a homogenous sample of organizations. With that said, the goal of theoretical sampling is to choose cases which are likely to extend the emerging theory (Eisenhardt, 1989).

Taking the above said into consideration, we started off by collecting data of 23 Reverse Innovation cases to identify what types of cases we were able to find within our research period (January to May of 2015). Because of our research topic, Reverse Innovation, it was critical to include enterprises that had completed the whole loop of Reverse Innovation, i.e. that had both innovated for emerging markets, and launched the product in developed markets. Out of the 23 cases, we selected four cases for an in-depth analysis, where the aim was (1) to provide cases with companies from different backgrounds, such as companies with origins from emerging and developed markets, as well as companies with different company types (like MNEs or Start-ups); and (2) to have a broad range of different innovations that had different impacts on the respective market. As suggested by Pettigrew (1988), we chose the cases that expressed the extremes of the mentioned aspect. Even though Eisenhardt (1989) states that there is no ideal number of cases to investigate, she argues that between four to ten cases usually works well. By using four cases, we can generate theory with depth, and the empirical grounding behind the theory will likely be strong (Eisenhardt, 1989). A further key aspect when choosing the in-depth cases were the primary and secondary data available at the time in order to be able to provide detailed case studies. *See the chosen companies for the in-depth case studies in Table 1.*

Table 1 – Presents the four enterprises chosen to analyze

Enterprise	Industry	Market origin	Headquarters location	Disruptive Innovation	Revenues
Galanz Enterprise Group Co. of Guangdong	Home appliances	Emerging Market	China	Yes	2,87 bn USD
Logitech International S.A.	Computer peripherals	Developed Market	Switzerland	Yes	2,1 bn USD
GRIT/Global engineering and research Massachusetts Institute of Technology	Healthcare, Transportation aids	Developed Market	US	No	<1 MUSD
Nokero, US LLC.	Energy and lightning	Developed Market	US	No	<10 MUSD

4.3 Data Collection & Analysis

To collect data, both primary and secondary data sources were used. Secondary data included academic journals, articles in renowned newspapers and books. Additionally, interviews were held to both fill gaps and verify the secondary data.

4.3.1 Primary data

According to Malhotra (2010), conducting interviews should be the preferable method when the aim of a study is to get as many details and expert opinions of a phenomenon as possible. We conducted interviews with two high-level managers of the chosen in-depth case enterprises, as well as with an industry expert within the field of innovations.

4.3.1.1 Questions & Structure of Interviews

Each interview lasted for 30 or 60 minutes, was held in English, and was well structured to meet the needs of the case writing. Of the three interviews, two were held over the phone due to physical location differences, and the third was held face-to-face. All interviews were tape-recorded, both to ensure getting accurate information as well as focusing on facilitating the interview (Bryman & Bell, 2011). Afterwards, the interviews were directly transcribed to text in order to contribute to the writing of respectively case study or analysis. In each interview, both researchers participated, where one facilitated the interview and the other took notes, which is according to Eisenhardt (1989), the efficient way of interviewing. The four pillars, presented in *Figure 11*, strictly drove the questions and content of each interview. The interview guide of the interviews is presented in *Appendix I.*

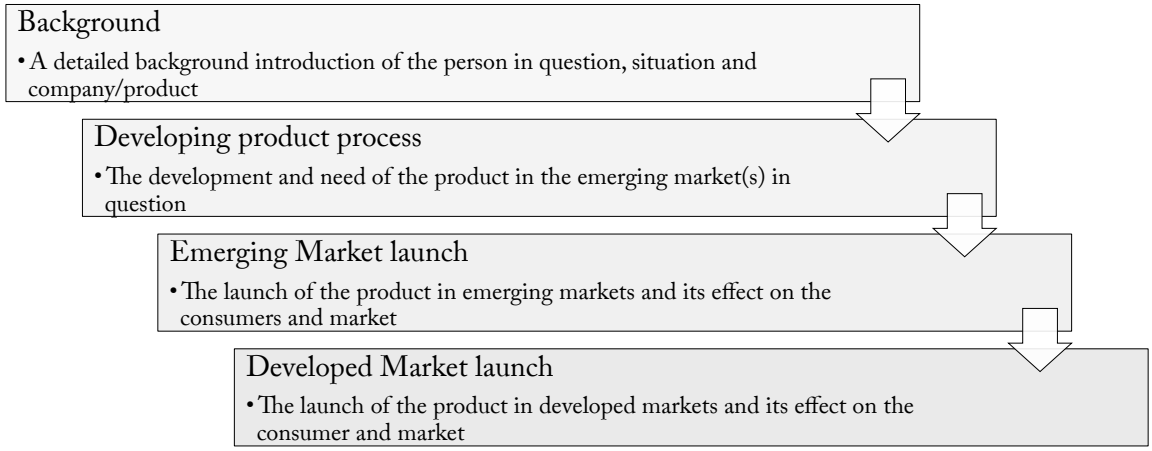

Figure 11 - Interview guide framework

4.3.1.2 Interviewees

Table 2 lists the candidates that were interviewed, following the details of the interviews.

Table 2 – The interviewees included to conduct our research study

Enterprise	Interviewee	Working position of interviewee	Date	Interview Medium	Location	Duration
Nokero	Steve Katsaros	CEO	12th of March 2015	Skype	Denver (US), Stockholm (SE)	1 Hour
Electrolux	Joachim Rask	Vice President Innovation Operations	12th of March 2015	Face-to-Face	Stockholm School of Economics (Stockholm, SE)	1 Hour
Logitech	Delphine Donne-Crook	Head of Marketing Asia Pacific	23rd of March 2015	Telephone	Beijing (China), Stockholm (SE)	30 Min.

4.3.2 Secondary data

The empirical evidence presented in this thesis is heavily dependent on secondary data. The main reason for that is that it was very difficult to get in personal contact with companies conducting Reverse Innovations. As Reverse Innovation is close to the strategic positioning of a company, decisions and processes concerning Reverse Innovation are mostly made by top management and/or in emerging markets. This means that the localization of the staff suited for interviews, in almost every case, was outside of Europe, in either the US or China. Furthermore, because of the closeness to the business model, many companies chose not to share information. Thus, to arrange interviews with the managers in charge or involved in Reverse Innovation processes within the companies was limited. However, as in the case of Galanz for example, we found very valuable secondary data that provided enough depth and background to write the case and analyze the research questions. In general, we mainly used past interview material with management and employees of the business concerned, and articles from published academic research and business journals as secondary data. The journals used were both printed and electronic. To complement our research, we used books as an additional source of secondary data that conducted interviews with managers of the respective company involved in Reverse Innovation.

Because of the validity issue when using secondary data, it was critical to include sources that were reliable (Bryman & Bell, 2011). When choosing the data sources, we assessed the validity by examining the writer's connection to the company/top management, and the authenticity of the sources. We only used data that were conducted through interviews with managers and personnel within the Reverse Innovation process in the respective company. In the case of GRIT and Nokero, because of the small size of the companies, we only used data that came

directly from the founders themselves. These data also included TED talks. However, when publishing articles or holding a TED talks, the presenter has the opportunity to color the data by the success-story of the case. With this in mind, we only captured main data points of the sources, rather than the talker or writer's opinions and perspective. Furthermore, we used multiple sources to confirm the data.

Galanz Enterprise Group Co. of Guangdong – The main source for this case was (1) corporate press news from Galanz, and (2) a detailed article about the development of the enterprise Galanz by Ge and Ding (2007), who personally interviewed 20 managers and personnel at Galanz between May and December in 2002, as well as in December 2006.

Logitech International S.A. – To further support the information gathered from the interview with Donne-Crook (2015), secondary data from the book Reverse Innovation: Create Far From Home, Win Everywhere by Govindarajan and Trimble (2012b) was used. The authors collected data by interviewing Rory Dooley, Senior Vice President of Control Devices business unit at Logitech in April 2010.

GRIT/Global engineering and research Massachusetts Institute of Technology – For the case of the Leveraged Freedom Chair, secondary sources consists of previous Ted Talks and interviews by and with the inventor Amos Winter, as well as research papers written by the inventor himself.

Nokero US, LLC. – To further support the information gathered from the interview with the founder and innovator Katsaros, we used secondary sources, which consist of previous interviews with Katsaros, and background data collected from renowned American newspapers such as Forbes and The Guardian.

Bryman and Bell (2011) argue that there are both pro's and con's to using secondary data as a source of references. First of all, secondary data has its limitations in terms of validity. Because of our critical mind when selecting sources, we consider our secondary data to have good quality in terms of validity and credibility, which gives the opportunity for longitudinal and cross-case analysis. Besides the issue of validity, Bryman and Bell (2011) also highlight the lack of familiarity with the data used, the complexity of the data (often huge amount of data to sort through), and the potential lack of data of key variables. However, by being very strict in how and what data was to be collected, we kept the data simple and easy. By conducting interviews with Logitech and Nokero, we solved the limitation of a lack of data of key variables.

4.3.3 Data Analysis

The analysis of the four in-depth cases was divided into two steps. First, we analyzed each case on its own in order to get a deep understanding of each particular case. Secondly, we conducted a case-comparison approach in which we compared the cases with each other to find patterns and similarities, on which we could build our theory. (Yin, 1981; Eisenhardt, 1989) This was done in accordance with the process of grounded theory developed by Glaser and Strauss (1967), in which the key process is to code the data into components. By doing this, we could compare the different components with the different cases to find the patterns for developing the theory. While analyzing data, a constant comparison was made, in which we maintained close connection between data and conceptualization, so that the link between concepts and categories was not lost.

The cross-case analysis approach was also used when analyzing the mini-cases. We selected categories and looked for similarities and coupled cases together, while also switching categories and analyzing the different dimensions to observe that the selected categorization still holds (Eisenhardt, 1989). By following this approach, we could establish the concept of Reverse Innovation (hence, associate it with labels found) and identify specific characteristics of the phenomenon (Glaser & Strauss, 1967).

4.4 Research Quality

Because of the different limitations, here we assess the research quality of our study. To evaluate the research quality, Yin (2014) argues that one should assess the four core criteria of a case study research: (1) construct validity, (2) internal validity, (3) external validity, and (4) reliability. However, these criteria are used for assessing quality of quantitative research according to Bryman and Bell (2011). Because case study research has characteristics different from quantitative research, Lincoln and Guba (1985) suggest an alternative method of assessing quality by evaluating the criteria trustworthiness and authenticity. Because the authenticity criteria has not been adopted and accepted by researchers (Bryman & Bell, 2011), we will assess the criterion trustworthiness, which consists of four pillars: credibility, transferability, dependability and conformability.

4.4.1 Credibility

Lincoln and Guba (1985) explain that internal validity of a research study can be evaluated by assessing its credibility. By evaluating the data sources, we can evaluate how credible a researcher's provided conclusions and findings are. With accordance to the suggestions by

Bryman and Bell (2011) we collected data from many various sources (interviews, secondary data interviews, research papers etc.) when creating the case studies, thereby ensuring a true and whole study of each case study, and thus increasing the credibility of the research. In the case of Logitech and Nokero, we validated the data gained by secondary sources in each interview to gain further credibility. This was done by giving the interviewees the possibility to speak broadly and develop their answer in a way that was not controlled or guided by the interviewer's source of information. Also, by recording each interview, we ensured that the information given was correctly used. With this said, because of the limited amount of interviews, the validity of this thesis mainly lies in the credibility of our secondary sources and their method of collecting data. As mentioned above, by being very selective when choosing sources, we believe that informative and trustworthy sources are used solely.

4.4.2 Transferability

Transferability is what Lincoln and Guba (1985) are referring to as external validity of the research study. The grade of transferability depends on the degree of generalization and applicability of the results of our study on other cases and studies. For case studies, Yin (2014) argues that a statistical generalization cannot be made due to the lack of quantitative data. However, our research provides analytical generalization by using research questions of how and why (Yin, 2014). Furthermore, by using many cases, we could find cross-case patterns, which increase the transferability of our research study (Yin, 2014).

4.4.3 Dependability

To assess the dependability of a research study, the research study should give the same result if the research was provided in the same procedures and on the same case study by another researcher (Lincoln & Guba, 1985). To ensure a dependable research study, we followed the case study protocol developed by Yin (2014), which is a detailed procedure from how to build the case study questions to the data collection plan. Furthermore, we developed a case study database to choose cases from (Yin, 2014).

4.4.4 Conformability

Lincoln & Guba (1985) state that a researcher cannot truthfully be objective when conducting business research, and the study should be dependent on as few personal beliefs as possible, thus acting in good faith. By including as many different sources as possible to support our empirical data, we aimed to increase the objectivity of our research. To bring the objectivity even further, we tried to link every finding of ours to the existing theory available.

5 Case Studies

This chapter presents the empirical findings of our research study. It initially presents an overview of the 23 Reverse Innovation cases found throughout the research period. Following this is an in-depth description of the four cases selected to describe Reverse Innovation: Galanz, Logitech, GRIT, and Nokero.

5.1 Overview of Reverse Innovation cases

Below, we present a brief overview of the 23 cases found of Reverse Innovation. A further explanation of the innovations' specifications, the consumer need it aims to satisfy, and why it went the reverse, is provided in *Appendix VII*.

Table 3 - Cases of Reverse Innovation

Nr	Enterprise	Company Origin	Innovation	Product Category	Innovation Diffusion Characteristic	Disruptive (Y/N)	Frugal Innovation (Y/N)	Emerging Market Launch	Developed Market Launch	Innovation characteristic	Customer segment in Emerging Market	Customer segment in Developed Market	Company Type
1	GE Healthcare	US	ECG machine	Healthcare	Relative advantage and Complexity	Yes	Yes	India	US and Europe	Low price, smaller size, easy to use	Mass Market	Mass Market (Low-end)	MNE
2	GE Healthcare	US	Lullaby baby warmer	Healthcare	Relative advantage and Complexity	Yes	Yes	India	US and Europe	Low price, high performance, easy to use	Mass Market	Mass Market (Low-end)	MNE
3	Haier	China	Washing Machine	Home appliances	Relative advantage	Yes	Yes	China	US and Europe	Cheap, smaller size, and energy efficient	Newly emerging middle class	Mass Market (Low-end)	MNE
4	Galanz	China	Microwave Oven	Home appliances	Relative advantage	Yes	Yes	China	Mainly US, Canada, France	Cheap, smaller size, energy efficient, and more features	Newly emerging middle class	Mass Market	MNE
5	Logitech	Switzerland	Computer mouse	Technology	Relative advantage and Compatibility	Yes	Yes	China	US and Europe	Low price, features of a high-end product	Newly emerging middle class	Mass Market (Low-end)	MNE
6	John Deere & Co	US	Tractor	Agricultural machines	Relative advantage and Compatibility	No	Yes	India	US	Cheap, small size, less fuel usage, good quality	Mass market farmers	Mass Market (Low-end)	MNE
7	GRIT	US	Wheelchair	Transportation	Relative advantage and Complexity	No	Yes	India/Africa /Brazil	US and Europe	Low price, easy repairable, good quality in terrain	Rural area consumers	Niche Market (High-end)	NGO
8	Harman	US	Infotainment system	Technology	Relative advantage	No	Yes	China & India	US and Europe	Low price, most desired functions, good quality	Newly emerging middle class	Mass Market (Low to mid-end)	MNE
9	Mahindra & Mahindra	India	Tractor	Agricultural machines	Relative advantage	No	Yes	India	US	Low price, low weight, small size, good quality	Mass market farmers	Mass Market (Low-end)	MNE
10	SOLAR Coca Cola	US	Solar powered cooler	Energy	Relative advantage	No	Yes	India	Europe	Useable without electricity, low price	Rural area shops	Niche Market	MNE
11	Nokero	US	Solar light bulbs	Energy	Relative advantage	No	Yes	Africa	US	Useable without electricity, rel. low price	Mass market	Niche Market	Start-Up
12	Renault	France	Car (Logan)	Transportation	Relative advantage and Compatibility	No	Yes	Romania	Mainly rest of Europe	Low price, good quality & safety	Newly emerging middle class	Mass Market (Low-end)	MNE
13	P&G	US	Razor blade	FMCG	Relative advantage and Compatibility	No	Yes	India	US	One blade, low cost, "good-enough" performance	Newly emerging middle class	Niche Market (Low-end)	MNE
14	Electrolux	Sweden	Refrigerator	Home appliances	Relative advantage	No	No	Thailand	US and Europe	Customizable fridge	Mass Market	Mass Market	MNE
15	Grameen bank	Bangladesh	Microfinance	Financial services	Relative advantage	Yes	Yes	Bangladesh	US and Europe	Small loans with rel. low interest rates	Niche: entrepreneurs in poverty countries	Niche Market	NPO
16	Nestlé	South East Asia	Noodles	FMCG	Relative advantage	No	Yes	Singapore	Australia and New Zeeland	Low cost noodle with 98% lower fat	Mass market	Mass Market	MNE
17	Nokia	Finland	Mobile phone	Telecom	Relative advantage and Complexity	No	Yes	India	US and Europe	Low cost, strong battery life, and basic features	Mass Market	Niche Market (Low-end)	MNE
18	Suzlon	India	Wind energy	Energy	Relative advantage	Yes	Yes	India	US, Spain, Italy, Australia	Electricity at lower price and higher efficiency	Mass Market	Mass Market	MNE
19	Yadea	China	Electronic bike	Transportation	Relative advantage	No	Yes	China	US and Europe	Low price, good quality/performance	Mass Market	Niche Market	MNE
20	Philips	Netherlands	Solar stove	Home appliances	Relative advantage and Compatibility	No	Yes	BRIC	US	Useable without electricity, low price	Niche Market	Niche Market	MNE
21	Tata	India	Water purifier	Home appliances	Relative advantage and Complexity	No	Yes	India	US	Low price, easy to use, good quality	Mass Market	Niche Market	MNE
22	Vodafone	Kenya	Mobile transaction	Transactions	Relative advantage and Complexity	Yes	Yes	Kenya	US	New technology, low price, easy to use	Mass market	Mass market	MNE
23	Levi Strauss	US	Jeans	Clothing	Relative advantage	No	Yes	China	US	Low price, good quality, and smaller sizes	Mass Market	Niche Market (Low-end)	MNE

5.2 Galanz – Reverse Innovation of Microwaves

5.2.1 Background

China was at the early phase of its economic development in 1978 when the reform of the state, and its opening-up brought a lot of opportunities to further develop the economy. In September the same year, Galanz was founded, originally as Guizhou Down Products Factory, located near Hong Kong in the district of Shenzhen, southern China. It began to manufacture water-washed down feathers including goose, duck and chicken feathers. In 1991, the textile industry became very competitive as increasingly factories entered the Chinese market. Although Galanz remained profitable, the senior management sought to enter an industry with higher profit margins, as well as large future growth potential. (Galanz Corporate News, 2008)

5.2.2 Product Development Process

After one year of managers' market research and with inspiration from Japan, Galanz decided to enter the Chinese microwave oven market in 1992. The 1980s continuing economic opening of China led to an increased purchasing power of the middle class that the country had not experienced before. This led to a booming demand for home appliances, why many developed market's brands, such as Whirlpool, entered and dominated the Chinese market. (Ge & Ding, 2007) At the time, some of those developed market MNEs begun to outsource their production to emerging market factories, which operated as manufacturing contractors. With this strategy, the Chinese manufacturers produced in China but sold the products to other markets than the domestic. (Galanz Corporate News, 2008)

In the early 1990s, the evanescent outsourcing trend grew even bigger when labor cost in Europe and the US increased significantly. This led to shrinking profit margins for the developed markets' manufacturing companies, so that many developed markets MNEs gradually started to outsource their manufacturing facilities to Japan, South Korea and other Southeast Asian countries. As China moved into the second half of the 1990s, the domestic manufacturing system had been improved and its manufacturing abilities had been strengthened. In addition, China now offered not only low labor costs but also improved social and political conditions. Therefore, developed as well as emerging markets, started to move its manufacturing facilities from Japan and South Korea to China. The president of Galanz, Mr. Leung Chiuyin, believes that the main advantage for producing in China is affected by the low cost of labor. Galanz' low-cost production is based both on the low cost of labor but also on economies of scale it gained by its production size. (Galanz Corporate News, 2008) When

positioning itself back in the early 1990s, Galanz decided to increase its sales by designing and manufacturing its own private label microwave ovens, and selling it to the domestic Chinese market, instead of taking the strategy only as a contract manufacturer for developed market's brands. (Hang et al., 2010)

5.2.3 Emerging Market Launch

At the time of Galanz entering the Chinese microwave oven market in 1992, only 2% of the Chinese families owned microwave ovens and there was a massive growth in the newly emerging middle class. The reason why most families did not own a microwave oven was because (1) they could not afford it, and (2) few family kitchens were large enough to contain Western model sizes. (Hang et al., 2010) In order to close that gap, Galanz followed a frugal innovation approach (Zeschky et al., 2011) by investing heavily in manufacturing competence, R&D, and design to develop a simple, energy-efficient microwave both small enough and affordable to the emerging Chinese middle class kitchens (*see Appendix III*). In practice, Galanz first appointed a new R&D team that consisted of five senior engineers from Shanghai FeiYue, one of the four microwave oven manufacturers in China at the time (Zhao et al., 2012). Second, in 1992, Galanz bought its first microwave oven assembly line together with associated equipment from Toshiba to start of production and design (Ge & Ding, 2007). These excessive R&D and external knowledge-seeking efforts resulted in a high-quality product with improved features and close to developed-market quality offered at an emerging-market price (Hang et al., 2010). Rather than just pushing the new product out to the Chinese consumers, Galanz realized that key to success when launching the microwave in China was to educate the consumers about the benefits of using a microwave oven. (Hang et al., 2010) In 1993, the first microwave oven was successfully launched in China, and by 1996, three years later, Galanz' market share in China reached 50% (Ge & Ding, 2007).

5.2.4 Developed Market Launch

By 2000, Galanz had a 70% market share in China. As it grew, it started to add features and functionality; first to suit the needs for the high-end Chinese customers, followed by the needs for the US and European customers, which was the starting point of its export to developed markets. It did not take long before the company had a wide international reach. By 2005, more than 50% of Galanz' microwave ovens were manufactured for international export under its own brand. Because of its Chinese roots, it was the innovator for microwave features such as stir-frying, deep-frying, and steam cooking, which made the microwave oven a broader cooking device, not only in the Chinese consumers' kitchen, but worldwide: Galanz made a global mark

with its innovative small and cheap microwaves, perfect for middle-class families and small households in developed countries. (Hang et al., 2010)

Due to the success of Galanz' microwave ovens and reasons stated above, international competitors started to move their production to Galanz' factories. Galanz worked with the price of the microwave compressors, the key component of microwave ovens, to win contracts. Due to its scale, it was able to offer manufacture microwave compressors to its international competitors for about USD7.5 (compared to USD30 from Europe and Japan). In return, Galanz required the same competitors to move their manufacturing equipment to Galanz' production facilities, and to allow Galanz to exploit any additional capacity for its own production. With this deal, both the European and Japanese firms outsourced their production facilities to Galanz, resulting in greater economies of scale, lower product prices and greater R&D achievements for Galanz. In 2007, Galanz produced every third of every new microwave produced in the world, and the microwave compressor made by Galanz was charged around USD4. Its facilities operate almost non-stop, on average five times as many hours than comparable Western manufactures' plants. All of this resulted in fixed cost that was cut five to eight times, per unit, compared to Galanz' first microwave oven launch in 1993. (Ge & Ding, 2007) This gave Galanz the resources and incentive to apply nine sequences of major price cuts on its microwave oven, where every price cut was ranging from 25-40% from previous price. Each price cut kept Galanz' production volume growing, which also provided more opportunities for it to reduce its prices again and again. It became very difficult for the competitors to respond. They had two options at the time: Either, they could match Galanz' price to survive, or they could exit the market. The first one was barely an option, because it meant losing money, since Galanz' prices were below the competitors' average costs. And because this was not an option for the majority of competitors, Galanz eliminated them one after another and became a dominant microwave oven producer. Furthermore, because of this low price level, and thus very low profit margin, hardly any new companies entered the, to them, now unattractive market. (Ge & Ding, 2007) By its sustainable, both domestic and global strategy, Galanz had maintained the no. 1 sales of microwave ovens in the world for consecutive 10 years by 2008. (Galanz Corporate News, 2008)

5.3 Logitech – Reverse Innovation of Computer Mice

5.3.1 Background

In 1993, Logitech, the global computer and tablet peripherals enterprise from Switzerland, started its first business in China through a manufacturing joint venture in Shanghai. When

entering China, Logitech implemented the Glocalization strategy, i.e. it simply sold Western consumer products with feature and design adjustments to match the lower price point demanded in the Chinese market. (Govindarajan & Trimble, 2012b) With respect to its wireless mouse, the price in China ranged from USD50-150, depending on the complexity of the mouse's features. At this price range, Logitech experienced, to them, surprisingly little sales, but waited patiently for the booming Chinese middle-class to grow. In the company's view, the needs of the consumers would change in the same way as the Western world did. (Govindarajan & Trimble, 2012b) Delphine Donne-Crook, today head of Marketing Asia Pacific at Logitech, but in 2009, head of the Computer Mice Portfolio Design in San Francisco, US, explained that there was very little focus on China before 2009. Logitech thought it was doing acceptable in China as it had the No.1 market share in China, which resulted in a 12th place on its list of focus countries. (Donne-Crook, 2015) With the time passing by and Logitech still waiting for the Chinese market to grow, a local competitor, Rapoo, introduced a wireless computer mouse in 2008 for only USD15 in China. The model focused only on the features important to the Chinese market, and thus offered, in the Chinese consumer's view, the same capabilities as the models of Logitech. (Govindarajan & Trimble, 2012b) Within six months, Rapoo was the market leader in China, and Logitech could not stand idly by and watch anymore (Donne-Crook, 2015). The company realized that it had looked at the global market in a too narrow way: By seeing Microsoft as its biggest competitor no matter where in the world it competed, Logitech ignored that its closest competitor actually was a local one in the world's potentially largest, and emerging market. (Govindarajan & Trimble, 2012b)

5.3.2 Product Development Process

After the competitor focus switched, Logitech started to investigate the Chinese market more closely. Soon enough, Logitech gained the insight of large differences in the usage of the mouse between the Western World and the Chinese market. Both markets employed the mouse as a computer remote; however, the context of usage was widely different. In the Western countries, a computer mouse is perceived as a commodity piece, with individual users sitting at their desk to control their computer. Furthermore, many settle with a low-end corded model. The high-end wireless Western models have a range of additional features, such as: (1) the range from the computer the mouse can be active at, (2) the speed of motions, and (3) shielding of paring of mice to computers. The three standard Western models of Logitech had different range features, which the price points were shadowing. The logic went: As customers purchased a more expensive mouse, they got a more improved mouse in terms of performances and

capabilities. This logic was working very well in developed markets; however, it did not in the emerging ones. (Govindarajan & Trimble, 2012b)

When analyzing the Chinese market, Logitech noticed that the markets had important differences, which were not taken into account in its Chinese market offering. The first key difference they observed was the effect of the extremely high population density in Chinese cities. Americans are used to live in houses with yards to separate them from their neighbors and did not have to reflect on the interferences between neighbors' mice. Robust shielding from interference of mouse signals could not be seen a luxury option for the Chinese consumers; it was a necessity for them in order to even consider buying the mouse in the first place. To get the shielding needed, a consumer would, through the Western pricing model, have to pay significantly more for the Logitech mouse than its local competitor, Rapoo, charged. Secondly, Chinese consumers had a new mode of application of the computer that Logitech had not experienced earlier. Because of the slow development of satellite and cable infrastructures in China, people tend to prefer Internet video content to cable television. Chinese consumers plug their laptop computers into their televisions to watch downloaded or streamed movies and television shows. This behavior demanded a mouse with adequate range to make it possible to use the mouse as a remote control while sitting on the couch. Last but not least, the pricing point, even though lower than the Western market, was not low enough for the Chinese middle-class. In sum, Chinese consumers needed a low-end product's price with high-end product features. (Govindarajan & Trimble, 2012b)

5.3.3 Emerging Market Launch

By being too locked in its Glocalization view, Logitech was now behind its competitors with respect to computer mouse development for the quickly growing China. Usually when a small competitor emerged, Logitech saw it disappear soon enough as well. But this was not the case of Rapoo. (Govindarajan & Trimble, 2012b) Consequently in early 2009, Logitech sent Donne-Crook to China to put together a product portfolio team to create a new department that would solely focus on product development for China (Donne-Crook, 2015). The local team held members from Taiwan and China, together with additional support from Switzerland. With a time frame of six months, a new product had to be developed and launched on the Chinese market. Logitech noticed that although Chinese consumers wanted to get the lowest price possible, they might be willing to pay a bit more to get better performance of range and shielding. Through focusing on maximizing the Chinese consumers' value, i.e. limiting performance where it was not needed and driving the production costs down by working with

economies of scale of semiconductor chips and other materials, a new mighty mouse at a desirable price point of USD19.99 was introduced. Now, it competed both in price and performance to Rapoo's computer mouse. By using the frugal innovation approach, Logitech ended up with a product, which had better features and lower costs than its previous low-end model. Within six months after its launch, Logitech was back as the market leader of computer mice in China. (Govindarajan & Trimble, 2012b)

5.3.4 Developed Market Launch

Because the new mouse had both better features and lower costs (that led to higher profitability), there were no reasons not to launch it globally. Logitech rapidly replaced the existing low-end model in developed markets (the US and Europe) with the new China-developed mouse. The product launched globally was not in any way modified, by neither performance nor price. (Donne-Crook, 2015) Besides the fact that Logitech had little to lose to globally launch the mouse originally developed for China, it knew that if it was not to launch this "better performing-low cost" mouse, a competitor would. In February 2010, five months after its launch in China, the computer mouse was launched in Europe, and two months later in the US. In less than one year after its European launch, 4.5 million units were shipped globally, and it was the first of all Logitech's new product launches to break USD10 million sales in China in just one year. (Govindarajan & Trimble, 2012b)

For launching the product globally, Donne-Crook (2015) explained that in order to prevent product cannibalization, the (local) product portfolio design was a critical step: Logitech had to always provide something with slightly better value at the next price point. When launching the product in the US, low-budget customers now buy Logitech's slightly better featured low-end computer mouse instead of a private label or non-branded low-end computer mouse. By having a Logitech-branded, low-end/entry level computer mouse for only 2-3 dollars extra, Logitech grabbed sales from e.g. Best Buy's own labeled low-end computer mouse. It was a win-win situation for consumers, the retailer, and Logitech: The customer got a more valuable and branded product at an affordable price, and the retailer got to earn more dollars per product sold. Logitech's production costs got lower at the same time as it was reaching a larger low-end market in the developed markets. Entry-level consumers would now start to buy Logitech's mouse instead of a private label mouse, and once they got ready to buy a mid-range or high-end mouse, the consumers were already attached to the Logitech brand. As a result, Logitech became more competitive in pricing than it was before the mouse developed for China had been created. (Donne-Crook, 2015)

When launching the computer mouse in the developed (and emerging) markets, competitors could react in two ways. They either cut the prices to meet Logitech's low-end price point, or they try to innovate ahead of Logitech's teams. To the former, competitors made too large price reductions so that they did not manage to survive over more than six months. Donne-Crook (2015) explained that in the end, a certain level of profitability was needed both to be able to survive and to further develop products. By undercutting its prices, competitors were not able to keep innovating, and they fell flat. Furthermore, with the competitors' lack of a good go-to-market strategy, despite their lower price, consumers were not willing to buy the slightly cheaper product as they had no attachment to the competitors' brands. For the latter competitor strategy, competitors were simply not fast enough to innovate ahead of Logitech's extent of innovation. (Donne-Crook, 2015)

Since the development and launch of its computer mouse in China, Logitech has continued to develop for emerging markets in many of its other product categories, ranging from keyboards to gaming and music categories. Generally, all these products have been extremely successfully launched globally in the low-end category of developed markets. When Logitech is developing a high-end product today, it focuses only on market consumer insights from the US consumers, and hardly involves the team or consumers of China. By contrast, when developing for low-end and mid-range products, Logitech uses China or India as focus markets, and does not listen to feedback from either the US or Europe to develop the specific product. (Donne-Crook, 2015) *See Appendix IV for China-developed models from Logitech*

5.4 LFC – Reverse Innovation of a Wheelchair

5.4.1 Background

When finishing up his Master Degree at Massachusetts Institute of Technology in 2005, Amos Winter was about to spend a summer in Tanzania performing technology research. He got in contact with the wheelchair organization Whirlwind Wheelchair International in San Francisco, who designs wheelchairs for developing markets. Winter further got in contact with an organization in Tanzania that taught individuals how to build wheelchairs and set up their own workshops. Both organizations were interested in assessing how well the current wheelchair technology was meeting the population's need in the emerging and developing markets. Winter's assessment of the wheelchair technology in 2005 in Tanzania became the start for his company GRIT and the development of the Leveraged Freedom Chair, the demanded wheelchair for today's emerging and developing markets. (Scherwood, 2013)

Winter's research back in 2005 revealed that the wheelchair technology available in developing markets did not meet the mobility needs of the population, especially not in rural areas. The wheelchairs available were mostly entry-level Western model wheelchairs, which were not robust enough to manage far transportation through rocky hills and muddy lanes. Additionally, many of the wheelchairs available where too big for indoor usage, which consequentially made the individual crawl on the ground to move indoors. All in all, Winter concluded that there were no wheelchairs available that could both enable the user to (1) travel fast and efficient on terrains, as well as (2) have the right measurements to be usable indoors as well. There was also the need of offering the wheelchair at a lower price because of the economic constraints of emerging customers, especially the ones living in rural areas. (Winter, 2013; Scherwood, 2013)

Of all individuals in need of a wheelchair in 2008, about 85-95% were populated in developing markets (NewDisability). According to Winter (2012), there were 40 million people in developing markets in need of a wheelchair in 2012. About 70% of them lived in rural areas with no available appropriate mobility. It became clear that this situation was not going to change in the near future. According to Winter et al. (2011), the demand of an appropriate mobility device is further supposed to increase with the years, with the greatest need existing in emerging and developing countries.

5.4.2 Product Development Process

In 2005, the wheelchairs available in developing markets were lower-end wheelchairs for USD75-150, which reminded of a hospital wheelchair with low performance, at a low cost. In developed markets, there were a few wheelchair models that worked quite well on terrain; however, their price point was between USD4,500-6,500. Not only was almost no individual in the developing market able to purchase these models due to economic constraints, they were also not able to locally repair the wheelchair when needed. The situation showed a demand for a wheelchair with the performance of the high-end device, but with the price of the low-end device. (Sherwood, 2013) With this in mind, GRIT began developing a new wheelchair for the emerging and developing markets. To succeed, it applied three requirements: it had to (1) allow travel up to five kilometers a day on varied terrain, (2) be locally repairable with local tools, and (3) cost the consumer less than USD200. (Winter, 2012) When needing to cut the price by over 90% from the high-end wheelchair, Winter realized that it would not be possible to adjust the high-end wheelchair, instead, his team needed to start from scratch (Sherwood, 2013).

5.4.3 Emerging Market Launch

From the idea that a lever grasped at different positions changes the effective lever length and creates the type of mechanical advantage needed, the Leverage Freedom Chair (LFC) was created. As a lever-powered mobility aid it provides the independence of others assistance, being accessible, empowered and affordable. The LFC was built out of 100% bicycle parts, which were accessible, inexpensive and made the wheelchair repairable at any bicycle shop in the world (*see Appendix V).* In 2008, the first generation of prototypes was constructed in Kenya and Vietnam together with a local wheelchair producer. (Winter et al., 2011) The first trial revealed that the LFC was 76% faster than a regular wheelchair in terrain, 41% more efficient and gave 51% higher torque. (Winter, 2014) In 2014, GRIT sold 4,000 LFCs in developing markets (RootCause).

5.4.4 Developed Market Launch

After a successful launch in India, Brazil and Africa, GRIT started developing the LFC for developed markets. It targeted individuals at rural areas or those with a passion for hiking. The lightweight performance wheelchair (*see Appendix V*) is sold for USD3,295 and as the customer buys one, the company gives away one to an individual in need of a wheelchair in the emerging and developing markets. (Winter et al., 2011) In 2014, the company sold 500 developed market LFCs to the US (RootCause).

5.5 Nokero – Reverse Innovation of the Solar Light Bulb

5.5.1 Background

An early morning in Denver, Colorado, in January 2010, Steve Katsaros woke up with the idea of a solar light bulb that would provide light without any use of electricity. He grabbed his sketchbook, and four days later a patent was filed for the technology that was to become the first solar light bulb of Nokero (short for "No Kerosene"). It took Katsaros five months to set up the company, and in June 2010, he and his team competed in a business plan competition in the US. Although they did not win the competition, it led to an interview with CNN by Ali Velshi that spread the news of the new solar light quickly and globally. A few days later, Katsaros received orders of the solar light bulb from all over the world. (Katsaros, 2015)

According to the World Energy Outlook (2014), in 2012, a total of 1.3 billion people lived without access to electricity worldwide. Nearly 97% of those without access to electricity live in sub-Saharan Africa and developing Asia. In India, up to a third of the country's population, close to 400 million people, are not connected to the national grid, leaving them cut off from the

development, progress, and opportunity that electricity represents. In most places in rural India, the grid supplies a maximum of 2h of power per day, however, not on a regular basis. About 10% of India is completely off power and 30% only offer an irregular power supply. In most of these areas, there will never be a reliable grid as it is not financially viable due to power distribution companies not having incentive to expand the grid, as this forces them to sell electricity at below cost rates. (Washington Post, 2012) As a consequence to the electricity constraint, the population uses kerosene to fuel light at night. The kerosene market is according to Katsaros (2015) amounting to around USD38 billion a year globally (lightning only). The usage of kerosene lamps is environmentally unfriendly, and causes over one million deaths every year (The Guardian, 2013). The World Bank (2010) has concluded that inhaling kerosene fumes is equal to smoking two packages of cigarettes a day. Another disadvantage of kerosene is the costs: end consumers in developing markets spend about 30% of their income on kerosene-based fuels (Forbes, 2013). An energy consumer in the US pays about 10-15 cents per kilowatt-hour (kWh) for electricity from a utility, while the same consumer in rural Kenya pays an equivalent cost of USD8 per kWh for kerosene (Huffington Post, 2014).

5.5.2 Product Development Process

With the electricity and cost constraint of developing and emerging markets in mind, Nokero developed a solar light bulb, a lantern-like LED lamp with four embedded solar panels, which are connected to a rechargeable battery (*see Appendix VI*). The battery is charged by the sun at day, and stores the energy to provide light at night. (Katsaros, 2015) The battery lasts around 300-500 charges, and one charge lasts for 2-4 hours depending on the time charged. When the battery is not rechargeable any more, the consumer can replace it for further use. (CNN, 2010) For manufacturing, Katsaros turned directly to China, where most solar light products are made, primarily because of the raw material components (battery, solar light panel, LED components and a circuit board). As the target consumer had a very limited budget to spend on a day-to-day basis, Nokero tried to push down production costs and delivered a USD15 solar light bulb. (Katsaros, 2015) Compared with kerosene, the end consumer could reach the break-even point of lighting costs after five months. Thus, the solar lighting lasts longer, and costs less in the long term (Forbes, 2013).

5.5.3 Emerging Market Launch

When launching the product, Nokero was mainly targeting India, South Africa, Zambia, and Equatorial Guinea. Due to the lack of Western-world infrastructure in those countries, the largest challenges were distribution and finance: To begin with, almost none of the respective

markets had Western-world stores with shelves. This provided a challenge in distributing the product from the factory in China to the end consumer in the rural markets. To solve this problem, Nokero united with distribution partners in every geographic market. (Katsaros, 2015) In India for example, Nokero uses a distributor with 7,000 door-to-door salespeople (Forbes, 2013). However, the financial issue was not as easy to solve. The majority of the partners lacked the money to finance the large economies of scale deliveries, which were needed to ship the product. However despite the constraints, Nokero pushed out its product and has up to today sold 1.3 million units to emerging and developing markets. (Katsaros, 2015)

Another large customer of Nokero, besides emerging market distributors, has been NPOs and NGOs that distribute the solar light bulbs to consumers in need for free. For large distributors and NGOs, Nokero sells the product for USD6. (Washington Post, 2011) The company also launched another product in 2013 that charges cell phones and battery powered devices through a USB port and provides light (*see Appendix VI*) (Forbes, 2013).

5.5.4 Developed Market Launch

Even though the product is targeting emerging and developing markets, Nokero identified a niche market in Western countries as well. The solar light bulbs are sold in developed markets through outdoor activity stores. There are also individuals that buy the device in case of blackouts or other catastrophes. Even though the product's main substitute to replace is kerosene, Nokero observes that it is currently replacing non-rechargeable batteries for flashlights, both in emerging and developed markets. In the future, the company is expecting a massive growth in demand due to the growing economy and population of the emerging and developing markets, as well as knowledge being spread to the people in these markets about solar lights and their advantages. These factors have also driven up the supply available at the market. When started, Nokero was one of the pioneers of the solar light bulb providers. Today there are over 200 manufacturers of solar light bulbs, where Nokero is top 3 in terms of sales. The worldwide market for off-grid power was valued at USD12 billion in 2014 by Sierra. For the future Katsaros (2015) explains that the real challenge is to bring the product price down to a price where it can completely replace kerosene. He explains that in emerging and developing markets, the end consumer will not make the right and intelligent investment in technology until he or she has emerged from the day-to-day survival.

5.6 Case Summary

Table 4 - Summary of in-depth case studies

Case Analysis	Galanz	Logitech	GRIT	Nokero
Country of origin	China	Switzerland	US	US
Industry	Home appliances/ White goods	Computer peripherals	Transportation/Mobility	Unconventional electricity/Lighting
Manufacturing country	China	China	Kenya, Vietnam	China
Local vs. global R&D team	Local (China)	Mix (China, Taiwan, Swiss)	Excessive field studies in emerging and developing markets	Technology development in the US, design in emerging and developing markets
Diffusion Strategy	Waterfall	Waterfall	Waterfall	Sprinkler
Frugal Innovation Approach	Yes	Yes	Yes	Yes
Consumer in Emerging Market	Chinese emerging middle class	Chinese middle- and low class	Rural living disabled population	Rural living population without or with limited access to electricity
Consumer in Developed Market	Middle class market and small households	Low-end market, entry level	Active individuals with reduced mobility	Outdoor segment of hikers and rock climbers
Price change of product (compared to the same performance)	93% lower price after all nine price cuts	60-87% lower price	96% lower price	N/A
Market Impact - Emerging Market	Consolidated market participants through lower price point and features	Consolidated market participants with a low price high performance computer mouse	Introduced a new device offering a low price high performance	Created a new market of solar light bulbs
Market Impact - Developed Market	Changed the market through new production operation and lower entry price point	Changed old market through lower entry price point with better performance than its precursor	Introduced a new product in terms of price, features, and design	Introduced a new product in terms of design and performance
Time before launching in Developed Market	8 years	5 months	6 years	0 years
Competitor Impact	Global consolidated competition	Low-end market consolidated competition	N/A	Global market size increased, and new competitor entered the market
Product modification for Developed Market	Yes	No	Yes	No
Why developing for emerging market	Identified a need of a cheaper, smaller, and electricity efficient microwave oven	Need for a different product offering because different consumer usage	Rural area consumers had a hard time using the low-end developed market's wheelchairs	To rid the world of the dangerous, polluting kerosene lamps
Main diffusion characteristics	Relative advantage (lower price, new features)	Relative advantage (lower price), compatibility (brand)	Relative advantage (better features)	Relative advantage (better and cheaper than kerosene, reusable)

6 Analysis

This chapter answers the three research questions of the study by analyzing empirical data and using the theoretical and conceptual framework. The first section analyzes general characteristics and dynamics of Reverse Innovations based on the 23 mini-cases. Section 6.2 is an analysis about the market dynamics that lead to the evolvement of Reverse Innovations. Section 6.3 sheds light on the internal company processes of Reverse Innovation development. Last, we will put the three research questions together, and illustrate how the questions are interlinked with each other.

6.1 What? – Characteristics of Reverse Innovation

With respect to Govindarajan and Ramamurti's (2011) first research agenda question, when analyzing the mini-cases of Reverse Innovation, it was first observable that all innovations were offered at significantly lower price points while maintaining or even exceeding the quality standard of the preceding product (e.g. Logitech's USD19.99 computer mouse with features of a USD150 mouse). It can therefore be interfered that Reverse Innovations are low-cost innovations offering considerably more utility for less expenditure (Zeng & Williamson, 2007). Instead of just pealing off design, quality, and features from a Western market product in order to reach the low price for emerging-market consumers, all case companies, except Electrolux, used a *frugal innovation* approach, which supports Zeschky et al.'s (2014) findings. This means that the companies analyzed innovated products that satisfied the relatively basic needs of poorer customers. With respect to the innovation development, Aaron Boey, president of Denizen (Levi Strauss), stresses that frugal engineering is "not about taking costs out, it's about deciding what costs to put in to deliver the value that consumers appreciate" (Financial Times, 2012). As a result, the resource constraint of the emerging-market consumer is already built into the product development process as a pre-defined criterion (Rao, 2013). Through this approach the case companies achieved a new price and performance level that has not been on the markets before, and many of them were able to outperform their competitors. Thus, to pick up our question from the theoretical framework, our research illustrates that most Reverse Innovations are also frugal innovations. However, we also observed that Reverse Innovations do not necessarily have to be frugal, as was the case of the flexible door refrigerator from Electrolux. The company instead followed a global approach with respect to its R&D where frugal was not a core element. When it comes to Electrolux's product development, it is not the physical product that diffuses from emerging into developed markets, but rather the idea and consumer insights behind the product.

With respect to the characteristic of *disruptiveness*, it is oftentimes rather difficult to judge whether an innovation changed the market or not. In addition, disruptiveness can be seen as a temporal issue in the respect that it can take years for an innovation to become disruptive. For our study, we evaluated the disruptiveness of the Reverse Innovations based on whether the innovation (1) spread into the mass market of the developed country, and (2) replaced the existing technology or business model in the developed market. We found that 35% of the Reverse Innovations had a disruptive effect on the developed markets, whereas 65% of the innovations had not disrupted the market yet. In most of the cases of disruptive reverse innovations, the business model was the disruptive factor. Thus, a business model that focuses on frugal innovation and low-costs appears to be competitive in developed markets. As in the case of Galanz for example, due to its low-cost business model, the Chinese company was able to become the leader in its industry, forcing the Western competitors to radically change their business model. What becomes in general apparent, though, is that our research contradicts Hang et al. (2010), stating that Reverse Innovations are disruptive innovations. Based on our research and definition of disruptiveness, there were cases in which Reverse Innovations attracted the developed-country mass market but also simply a niche market; or attract a mass market but do not replace the existing technology. Thus, Reverse Innovations can have both disruptive and non-disruptive effects on the developed markets, which supports the argument of Govindarajan and Trimble (2012a).

With respect to the impact of country and company size, four things were observable. First, supporting the findings of Zeschky et al. (2014), country of origin does not seem to have a significant impact on the companies' ability of developing Reverse Innovations (65% originate from developed markets). Though, within the developed-country companies, 40% of the Reverse Innovations came from US companies. Thus, with respect to Govindarajan and Ramamurti's (2011) fourth research agenda question, our research does not show a clear competitive advantage of emerging countries in developing Reverse Innovations. Second, the Reverse Innovations were usually innovated for, and first released in India and China, hence seeming to be the most promising emerging markets for the introduction of frugal innovations at the moment. Third, the developed-country target market was in most cases the US. This is probably due to the country's status as the hot spot for new product introductions based on the diversity and openness of its residents (Hofstede; Kao, 2009). When choosing the specific segment within a developed country, most of the Reverse Innovations attracted low-end customers (50%); only 5% targeted high-end customers. The remainder targeted the mid-

market of the respective developed country. This distribution makes sense, considering that Reverse Innovations are mainly low-cost, good quality products that attract value-for-money consumers in the developed markets. Lastly, of all the companies employing Reverse Innovation, 87% were represented by MNEs, and the rest were NGOs, NPOs or Start-Ups. The majority involved in Reverse Innovations being MNEs could be due to their greater amount of local resources with respect to product development and already established distribution channels, which facilitates not only the development of potential Reverse Innovations for emerging markets but also their diffusion in developed markets.

Extending existing research, we found that there is not a specific industry that is especially suited for Reverse Innovations. At most, 5 out of the 23 Reverse Innovations came from the home appliance industry, and the remaining came from various industries. Of all the cases, 74% of the products were sold business to business. Furthermore, 70% of the cases were end-consumer product (used by the end consumer, e.g. the "Logan" car, and not businesses, e.g. the ultrasound machine).

In order to deliver a new perspective to existing research, we analyzed the innovation category of Reverse Innovations (Robertson, 1967). With this respect, only 2 out of the 23 Reverse Innovations were a *discontinuous innovation* in emerging markets, i.e. offering something completely new and changing the behavior pattern of the consumer (microfinance and mobile payment). In contrast, 43% of the innovations were alterations of a previous innovation that had a disruptive effect on established patterns in the emerging market (*dynamically continuous innovation),* such as the innovation of Mahindra & Mahindra's tractor, that was smaller than existing tractors and that changed the market in India as its features were considered as more valuable than previous tractors offered. Slightly below 50% of the Reverse Innovations were alterations of previous innovation (*continuous innovation),* such as the "Logan" car, which is a cheaper version of a previous Renault model. The latter category was even larger when one considers the innovations in the context of the developed country. That means, in most cases the innovation was not completely new or did not significantly change behavior of developed markets as it did for emerging.

Connected to the physical product dimension of innovations' categories is the market dimension of innovations. Therefore, based on the research and definition of Kjellberg et al. (2014), we analyzed whether Reverse Innovations can be characterized as market innovations, i.e. altering the way in which business is done. Most of the Reverse Innovation cases from our research were

identified to cause a change in the existing market structure. Logitech, for example, successfully forced out some of its competitors and consolidated the competition base. Haier created with its small washing machines a new market segment in developed markets that consists of one-person households, such as students. There were even two Reverse Innovations that created an entirely new market, i.e. microfinance and mobile payment. Nevertheless, there were also cases in which the Reverse Innovations were embedded in the existing market. Nokero and GRIT, for example, positioned their products in already existing niche markets in developed countries. With this said, we observed that with respect to emerging markets 52% of the Reverse Innovations can be seen as market innovations, because they not only change the way business is done but also bring in new market participants that have been excluded before. With respect to developed markets, the amount is a bit smaller. However, one should also consider that most Reverse Innovations have just recently been introduced into developed markets. Thus, the long-term impact is quite difficult to judge in this respect.

What seems to be a common thread among the cases is that Reverse Innovations are technological products (19 out of the 23); thus engineering was the driver of the innovation. This is not surprising as emerging countries have ideal conditions to introduce new, leapfrogging technologies: Their past role as strugglers has now shown helpful as those countries are leapfrogging to advanced technologies and show a significant openness towards innovations and new opportunities (Mathews, 2006).

6.1.1 Attracted market size categorization (in developed countries)

As Reverse Innovations focus on economies of scale in order to make up for the low profit margins (Prahalad & Hart, 2002), a high sales volume is important in order to guarantee profitability. Therefore, we decided to analyze the underlying factors that make a Reverse Innovation attractive for the mass market of the developed country. In general, when analyzing our outline of 23 Reverse Innovation cases, we found that most of the Reverse Innovations were able to attract a significant amount of customers in the developed markets: 57% of the Reverse Innovations were adopted by the mass market of the developed country; 43% were adopted by a niche market. When it comes to the product characteristics, we found that Reverse Innovations, which became attractive to the mass market, first consisted of a higher proportion of technological products such as healthcare products, vehicles or home appliances (92%). These products mostly offered an improved continuous innovation with respect to price and performance that was valued by a wide customer base in developed countries. Innovations from the clothing and FMCG industry, though, mostly attracted niche segments in developed

markets, as those kinds of products only offered narrow targeted innovative features such as small jeans size or new tastes. The only FMCG that actually were valued by the Western mass market were focused on feature improvements, such as health benefits, rather than flavor specifics.

Second, Reverse Innovations that were only valued by a developed-country niche market consisted of a significantly higher proportion of Reverse Innovations serving basic necessities, such as electricity or mobility (60%). This correlation is not surprising, as the basic needs are mostly already covered in the Western world's market by modern country infrastructure. Consequentially, those innovations have a low probability in attracting developed-countries' mass market.

Third, when diffusing the innovation into the developed market, innovations that target the low-end customer segment have high chances to be attractive for the mass market (62%). When targeting the mid- to high-end customer segment in the developed country, there is a higher probability that the Reverse Innovation will only be valued by a niche market (70%). An explanation could be that Reverse Innovations that diffuse into the low-end market of the developed market have an extraordinary value proposition with its low-price, high quality products that has not been there before. Therefore, they are very much valued by the mass market of the developed market. In the mid- to high-end market, though, the competition is higher, and people focus more on design and other features that are not the core value proposition of Reverse Innovations. *See Table 5 for descriptive statistics of attracted market size categorization.*

Table 5 – Descriptive statistics of attracted market size categorization

	Innovation	
	Mass Market	**Niche Market**
Developed market origin	62%	70%
Emerging market origin	38%	30%
MNEs	100%	70%
Technological products	92%	70%
Serves basic necessities	15%	60%
Developed market – Low-end focus	62%	30%
Developed market – Mid-end focus	38%	60%
Developed market – High-end focus	0%	10%

6.1.2 Company origin categorization

In our general analysis we discovered that country of origin does not have an impact on the ability to develop Reverse Innovations. However, in consideration of Govindarajan and Ramamurti's (2011) research agenda question number five, we were curious whether a specific market origin could have a strength or competitive advantage with respect to specific Reverse Innovations characteristics. The most significant difference between the two types of origin is the choice of target customer segment when diffusing the product into the developed market: When a developed-market company diffuses the Reverse Innovation into developed markets, it is most likely to introduce the innovation to the low-end market (60%), whereas the emerging-market company most likely introduces it to the mid-market (75%). This can be explained by looking at Galanz and Logitech. When originating from an emerging market (Galanz), the company first served the native mass market. The economic constraints forced the developers to follow a frugal innovation approach and to develop low-cost products in high volume. When having served the emerging mass-market, the next natural step with respect to growth is to serve the native high-end market. For that purpose, the company added design, quality and high-end features. By doing this, the product is likely to match mid-end products of the Western markets, and thus, the innovation is logically targeting the mid-end market, however still offering a slightly lower price than most of the competitors. A developed-market company (Logitech), on the other hand, already has mid- and high-end products in developed markets. Replacing its low-end products in the developed markets with a low-cost, good quality product from emerging markets appears to be the most natural approach.

A second difference that is not as evident, but still apparent, is that companies with a origin from developed markets have a higher intention to serve basic necessities in emerging markets (40%), than when the company is originated in the emerging economies (25%). This is rather surprising as one would guess that emerging markets might be better suited to come up with innovations serving basic necessities as they live with the constraints on a daily basis. A possible explanation might be that innovators coming from developed countries are more likely to possess the engineering background necessary to develop an innovation like the wheelchair or a solar lamp: According to Katsaros, the emerging and developing markets had little knowledge of solar technology before the solar light bulb introduction.

Apart from the differences, it became apparent that it does not seem to make a difference where the company originates with respect to its ability to attract the developed mass market with its

Reverse Innovation. Also the amount of MNEs and technology intensive innovations seems to be indifferent of market origin. *See Table 6 for descriptive statistics of company origin categorization.*

Table 6 - Descriptive statistics of company market origin categorization

	Market Origin	
	Developed	**Emerging**
Mass Market reach	53%	63%
Niche Market reach	47%	37%
MNEs	87%	88%
Technological products	80%	88%
Serves basic necessities	40%	25%
Developed market – Low-end focus	60%	25%
Developed market – Mid-end focus	33%	75%
Developed market – High-end focus	7%	0%

6.2 Why? – The reason why companies engage in Reverse Innovations

6.2.1 Empirical Perspective on why to reverse the innovations

With respect to Govindarajan and Ramamurti's third research agenda question, when analyzing the cases, we found both individual and cross-case insights of why companies diffuse products originally developed for emerging markets into Western markets. The reason for Galanz to take its microwaves into developed markets like the US or Europe was mainly based on the fact that it already used to be the manufacturer of microwaves for many different developed-country companies. Thus, it seemed the natural next step for Galanz to directly sell its own products to Western consumers. In this way, the company could further increase its economies of scale and profitability.

Logitech decided to take the Chinese mouse into developed markets, as the innovation was simply more cost-efficient and thus more profitable than the Logitech low-end mice that were already in the developed markets. Due to the frugal design approach, the Chinese mouse was both cheaper in production, and of better quality than its predecessors in the Western market. Thus, Logitech saw no constraint in taking it as an entry-level product into developed markets as well. In contrast, it even aimed for a higher production volume to keep driving down the production cost.

With respect to the LFC, Winter and his team identified a niche market demand for the product in the developed market. Although not large in size, the segment of active paraplegics that wish to go cross-country seemed an opportunity to broaden the business model. Selling the

chair at a higher price (but still in the same price range as comparable wheelchairs in the developed-country market) to this Western customer segment made the business model more profitable and sustainable.

Nokero's Reverse Innovation can be seen as a fortuitous coincidence. According to Katsaros, he did not plan to sell the solar light bulb in developed markets. However, by having the media attention and e-commerce platform, Western consumers showed interest in the company's products. Especially the growing trend of being environmental-conscious and – friendly seemed to play a major role in the increasing demand of the Western world. In addition, the solar light bulb is a practicable device, primarily for outdoor sports and activities, so it appears a natural market development strategy to introduce the product in this kind of markets.

In sum, we identified different reasons why companies take the innovation the reverse. The common decisive motive, though, is the opportunity to achieve higher economies of scale. This makes sense considering that the low-cost character of Reverse Innovations (cf. 6.1.1) aims at achieving high sales volumes. Through taking the innovation the reverse, companies can make the low-cost business model more profitable.

6.2.2 Theoretical Perspective on why the innovations go the reverse

Following empirical reasons of why innovations trickle-up from emerging into developed markets, there are also theoretical explanations. By analyzing our complete list of Reverse Innovations, it became apparent that the main innovation's characteristic influencing its diffusion into developed countries was the product's *relative advantage*. That means, the Reverse Innovations found the way into developed markets as they were either perceived, from Western consumers' perspective, as having better performance than their precursor, or being offered at a better price (Rogers, 1962). Galanz, for example, offered the consumers not only a high-quality product with special features but also to a lower price than its Western markets competitors.

Another common product diffusion characteristic found was *complexity* (Rogers, 1962). As in the case of the GE lullaby baby warmer or the ECG machine, the products were much easier to operate and had fewer features than the existing products in developed markets. This makes them easier to use, and a favorable entry-level product for doctors and hospitals in the Western world as well as the low- to mid-end segment in emerging markets.

Lastly, some of the companies appeared to focus on the characteristic of *compatibility*, i.e. that the innovation is perceived as consistent with the existing values, needs, and past experiences of

potential adopters (Rogers, 1962). As became evident in the interview with Donne-Crook, although applying a low-cost approach, Logitech's well-known (high-) quality standard had to be met. Thus, for the diffusion of innovations from emerging countries into developed countries to work, it seems important that large international brands such as Logitech, P&G, or Philips still deliver the same brand image for their emerging-market innovations as for products created for developed markets.

Another way to explain why Reverse Innovations diffuse into developed markets is with the help of Beise's (2004) lead market theorem. According to Beise (2004), the lag market, which is in the case of Reverse Innovation the developed countries, adopts the innovation when its environmental characteristics reach a resemblance of the ones of the lead market, i.e. in the case of Reverse Innovation the emerging country. This can either be the case when the price of the product decreases (Galanz, Logitech, etc.) or the product benefits increase (GRIT, Nokero, GE, etc.). This is in compliance with the first two product diffusion characteristics, *relative advantage* and *complexity*. According to Beise (2004), the third factor that leads to a cross-country diffusion is an increase in the available budget. However, with respect to Reverse Innovations, this factor seemed to be the contrary. Rather, it is oftentimes consumers with less monetary resources (value-for-money consumers) that adopt the innovation in the developed markets (Logitech, Haier, Mahindra & Mahindra, Renault, etc.).

In sum, we found two valuable theoretical concepts that provide a theoretical explanation of why the typical features of Reverse Innovations, i.e. "low-price, high performance features and easiness to use" (Immelt et al., 2009), make them diffuse into developed markets. The prevailing frugal innovation approach that we identified in section 6.1.1 seems to play a major contributor for the diffusion as it supports two of the main product diffusion characteristics, i.e. relative advantage and complexity.

6.2.3 Reasons of why Reverse Innovations are happening right now

We identified four key reasons for the emergence of the phenomenon of Reverse Innovation within the last two decades, that further provide answers to Govindarajan and Ramamurti's (2011) second research agenda question: (1) the opening up and reform of emerging markets; (2) the growing importance of emerging markets; (3) global technology and communication improvements; and (4) the Western world's demand for inexpensive or value-for-money products.

The first reason for the emergence of the phenomenon of Reverse Innovation can be connected to the reductions in barriers to trade and deregulations, which facilitates the spread of innovations across several countries (Williamson & Zeng, 2009). As a consequence of the economic reforms of emerging countries, such as the one of China in early 1978, we can observe a growing amount of global leading companies originating from emerging countries (McKinsey, 2010). A reason for the growing success of multinational emerging-market companies is the ability of delivering cost innovations that change the rules of the game: They invented business models that allow them to offer a huge range of choices (features, flavors, design etc.) and the latest technology to mass-market customers at low prices due to a focus on high-volume products and services. (Williamson & Zeng, 2009) These emerging-market companies more and more realize their global potential and start to move beyond their home markets in order to grow further and sustain long-term competitiveness (BCG, 2006). The described strength in technological low-cost business models correlates with our result from section 6.1.2 that the majority of emerging-market companies developed Reverse Innovations that are (technological) sophisticated instead of serving basic necessities.

On the developed market side, we identified a growing importance of emerging markets as a new revenue source. Due to the increasing saturation of developed markets, companies shifted their focus towards emerging markets. According to a study of McKinsey (2010), emerging-market economies will rapidly evolve into major economic players, becoming the locus of control in consumption, production and especially innovation. As a result, many international companies already started to move their strategic focus from developed to emerging markets (Sarkar, 2011) and opened up local R&D centers to specifically innovate for emerging-market consumer. This increased focus on product development for emerging markets is likely to boost the development of potential Reverse Innovations. To add to that, one could identify an explanation for why we observed a majority of developed-country companies that tended to introduce innovations satisfying basic necessities in emerging countries (cf. 6.1.2): By reducing daily (economic and infrastructural) constraints through their innovations, developed-country companies might try to lift the emerging-country customers' purchasing power, generating current and especially future revenues and growth for the respective companies.

Furthermore, over the past three decades, large technological changes have transformed the way the world communicates and operates, which facilitates the diffusion of Reverse Innovations. The era of the Internet and improvements in other communication technologies has not only

led to a wider knowledge spread over continents, but also to a convergence in needs, consumer behavior and products (Ricart et al., 2004). In addition, today's consumers can purchase products from mostly all parts of the world through the Internet, making markets more consolidated. This has further been enabled through the progress in freight transportation. From a theoretical perspective, the advancements in communication technology might contribute to an increasing amount of ties and signals between emerging and developed countries (Peres et al., 2010), thus facilitating Reverse Innovation diffusion. Perhaps because of this reason, Rask, Vice President of Innovation Operations at Electrolux, explains that in their view, consumer needs are seen to be equal across the world, and not market specific. The preferences and tastes differ between markets, but not the intrinsic need or the idea behind an innovation. Thus, when a product is developed in an emerging market, it is only logical to launch it in developed markets as well. (Rask, 2015) In general, Western consumers appear to show a greater openness towards buying products from emerging-market companies. Chinese products are not seen as solely cheap and of low quality anymore. On the contrary, especially consumer electronics companies like Lenovo are very successful and popular in the Western world (Forbes, 2015). It is thus not surprising that companies find segments in developed countries that share the same kind of needs as emerging-market customers and that are open to adopt emerging-market innovations.

Last, we can observe a general tendency of developed-world consumers changing their consumption preferences towards low-cost products. Triggered by the financial crisis in 2008, many consumers in the Western world started to demand inexpensive or value-for-money products and services. (Prahalad & Mashelkar, 2010) According to a study of the International Monetary Found, the US household consumption after the financial crisis has significantly declined and is expected to have lasting impact on the US economy (Lee et al., 2010). As a result, Flatters and Willmott (2009) experienced in their study about the consumption behavior of the Western post-recession consumer a new demand for simplicity with respect to consumption patterns. According to their research, even prior to the recession, consumers begun to feel overwhelmed by the huge amount of choices and were, therefore, striving for simplicity. Thus, also consumers in the developed countries are looking for cheaper, less complicated, user-friendlier technologies. This trend is expected to be persistent also after the recession: Even with sufficient money, consumers want to buy simpler products with the greatest value. (Flatters & Willmott, 2009) Consequently, the big Western retailers, like Wal-Mart, Carrefour or Tesco, are increasingly looking for value-driven products from emerging-market companies. Haier, for

example, is working closely together with Wal-Mart and other large US and European retailers in order to serve the price-conscious customers. (Williamson, 2010) In our view, the growing amount of value-for-money consumers in developed countries is the cause of why the majority of Reverse Innovations in our analysis targeted the low-end consumers in developed markets with high value, sustainable, and user-friendly products (frugal innovations) (cf. 6.1).

6.3 How? – The Process of Reverse Innovation Development

The process, which a company goes through when conducting a Reverse Innovation, can be viewed as a classic emerging market innovation process that gets extended when diffusing the product into developed markets. *See Figure 12 for the innovation development process.*

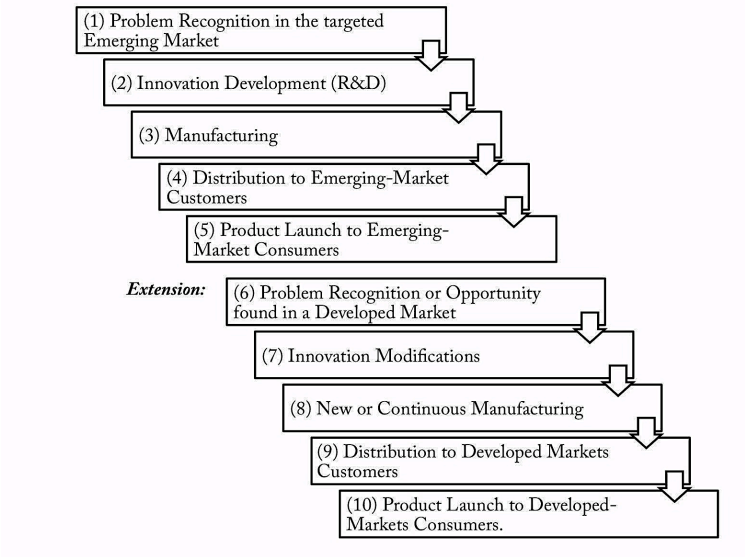

Figure 12 - Innovation Development Process

Because (1) problem recognition for emerging markets; (2) innovation development (R&D); (7) innovation modifications; and (9) distribution to developed market customers, are what we consider key steps of the Reverse Innovation process, we have chosen to focus on these to illustrate the process of Reverse Innovation.

6.3.1 Problem recognition in emerging markets

We found mainly two reasons why the companies analyzed started to innovate for emerging countries. Consistent with the aforementioned phenomenon of growing competition of emerging-market companies, Logitech started to innovate for emerging markets, as it had to defend its market position against a local competitor. As a result of a loss of market share due to a better value proposition of the local competitor Rapoo, Logitech realized that it had to change its innovation development strategy. Before, Logitech followed, as many other MNEs, a Glocalization approach, i.e. it modified its developed-market innovation in order to fit

emerging-market consumers' needs and preferences. However, through this strategy it only reached the high-end consumer in the emerging market, since emerging-market companies, as the ones described in 6.2.3, were able to deliver a better value proposition for low-cost products that target the low-end market of emerging countries.

The other reason why the companies from our case studies started developing products especially for emerging markets is related to the aforementioned growing importance of emerging markets (cf. 6.2.3). Despite the previously mentioned convergence of consumer tastes and needs, though, emerging-market consumers still significantly differ from Western consumers due to their local (resource-) constraints and poor infrastructure. Therefore, those consumers need different solutions than Western products offer: As in the case of the LFC, the Western-world wheelchair did not work in rural India because of the difficult road conditions. Nokero developed its business idea to overcome the lack of electricity in those countries. Logitech had to realize that Chinese consumers' living conditions demanded different computer mouse features. On the other side, companies needed to offer their solutions at a drastically lower price point compared to Western products. In order to attract the low-cost consumers, Logitech had reduced its price by 60-87%. Nonetheless were these markets still attractive due to the expected growth opportunities and the huge amount of potential customers (Prahalad & Hart, 2002).

6.3.2 Innovation Development (R&D)

The solution the case companies came up with in order to attract the high-growth segment of low-end customers in emerging markets, consisted of dramatically cutting the production cost following a frugal innovation approach. As became apparent in the interview with Donne-Crook and in the analysis of the three other in-depth cases, in order to create such a low price point, companies oftentimes apply latest technology, sophisticated engineering know-how and target costing. Furthermore, as in the case of GRIT, the frugal innovation approach oftentimes induces companies to start their product development from scratch instead of modifying an already existing product or innovation. By starting from scratch, companies avoid being stuck in the shell of the developed-market product and its accompanying point of view. This proves advantageous in light of the aforementioned different solutions needed for emerging-country consumers compared to Western ones: As in the case of Logitech, not only did these consumers demand other features in the product, but they were also satisfied with less features if the remaining ones offer a great price-performance ratio.

What is observable is that the frugal innovation development approach seems to be connected to our finding that most Reverse Innovations were continuous innovations. Hence, a Reverse Innovation is in most cases not a product that has never been out there before but an existing product that is adapted to the (resource) constraints of the emerging country consumers. In order to meet their budget constraints, it is the process or business model that has to be newly invented. As most of the innovations appeared to have technological attributes (cf. 6.1), companies need to innovate new methods to conduct R&D, manufacturing and/or distribution. The resulting new business model is based on achieving a dramatically low price together with good performance, i.e. a frugal innovation. In the case of the LFC, for example, the wheelchair itself is not new, however, the company had to come up with new ways to construct it in the most resource efficient way.

Another interesting aspect that can be observed was that companies appear to fail to achieve the low price point and loose their competitiveness in emerging markets when applying a Glocalization approach (e.g. Logitech). Not only does Reverse Innovation using a frugal engineering approach lead to the development of valuable products for emerging-market customers, it also appeared to be more beneficial when taking the product into developed markets. Having a low-cost business model, it allowed our companies to easily add cost and features for Western customers when needed (e.g. Logitech, Galanz, LTC). Therefore, with Reverse Innovation it is possible to reach a broader customer segment in the emerging market (both low-, mid- and high-end markets) than it is the case with Glocalization (mid- to high-end market). Consequently, to respond to Govindarajan and Ramamurti's (2011) research agenda question six, based on our findings, it became apparent that the strategy of Reverse Innovation might have good chances in replacing the strategy of Glocalization when it comes to global innovation development. To answer the question whether Reverse Innovation and Glocalization can be conducted simultaneously (Govindarajan and Ramamurti's (2011) research agenda question seven), we observed that this is possible. In the case of Logitech for example, the company is still using a Glocalization approach when diffusing an innovation into the same market category (emerging or developed), but a Reverse Innovation approach when diffusing it into a different market category.

Although we could not find a correlation between the company's country of origin and the successful development of Reverse Innovations, previous research findings suggest that when putting together an R&D team to innovate for emerging markets, it has shown to be

significantly advantageous to have a local R&D team that is located directly in an emerging market (Zeschky et al., 2014). This is also supported by our in-depth cases. All of them either had a team originating from emerging markets (Galanz), a mix from emerging- and developed - country nationalities localized in the emerging market (Logitech), or Western researchers intensively living and observing in the emerging market for a longer period of time (Nokero, GRIT). Living in markets like India or China, local R&D teams experience resource constraints on a daily basis and get the required experience, expertise, or mindset of frugal engineering (Agnihotri, 2014). Thus, we observed that only having R&D facilities in the emerging markets as suggested by Sehgal (2010) might not be enough.

Besides having local R&D teams, it seems crucial to break through the Western (innovation) hierarchies. As in accordance with Govindarajan and Trimble (2012a), we noticed a value for developed market MNEs management to provide a greater freedom and flexibility with respect to the emerging market innovation development and diffusion. In the case of Logitech, letting the Chinese and Indian R&D team focus on the product development of global low-end and mid-range products, and efficiently replacing existing low-end products with the new China-developed product in the developed market, revealed very valuable results and improved the company's overall profitability.

6.3.3 Innovation modifications for developed market

What distinguishes a Reverse Innovation from an ordinary innovation is that it diffuses from an emerging market into one or more developed market(s). This is possible since (as mentioned in section 6.2.1 and 6.2.3) companies identify Western customer segments that resemble the emerging market ones either in taste or type. However, in some cases we could observe that companies adapted or modified the product (price, features, design) before diffusing it into the developed market. The question is, what types or characteristics of a product or target market might make modifications necessary.

In the case of the LFC, GRIT found a Western niche market that values the same characteristics as the emerging market (being able to drive on rocky roads). However, Western market consumers have a higher disposable income and therefore demand greater design and robust quality with respect to a healthcare device such as a wheelchair. Therefore, Winter and his team not only improved the design but could also demand a higher price for the wheelchair. In the case of the solar light bulb, on the other hand, the developed-market end consumer did not demand such adjustments because the product's design and usage is so basic that it works

everywhere. Thus, Nokero was able to sell the same solar light bulb worldwide. What might make a modification with respect to such devices necessary, are legal or environmental regularities posed by the government, which was however not the case for Nokero.

With respect to Logitech's computer mouse, the target segment (low-end mass market) was the same when diffusing the product into developed countries. Therefore, Logitech did not do any modifications. This also helped the company reaching a lower cost structure due to higher economies of scale in the production. In the case of Galanz, though, the target customer in the developed country (mid-end market) valued long-lasting quality and an attractive design of kitchen devices. Thus, Galanz had to add features and change the design/quality of its products before going into developed markets. Hence, it can be observed that for more sophisticated products targeting the developed-market mass-market, modifications for Reverse Innovations appear to be necessary when a low-cost innovation is to be diffused into mid- or high-end Western markets. In the case of low-cost innovations targeting the low-end market in the developed market, though, no or little modifications are needed. *See Figure 13 for the Modification/Market matrix of our in-depth cases.*

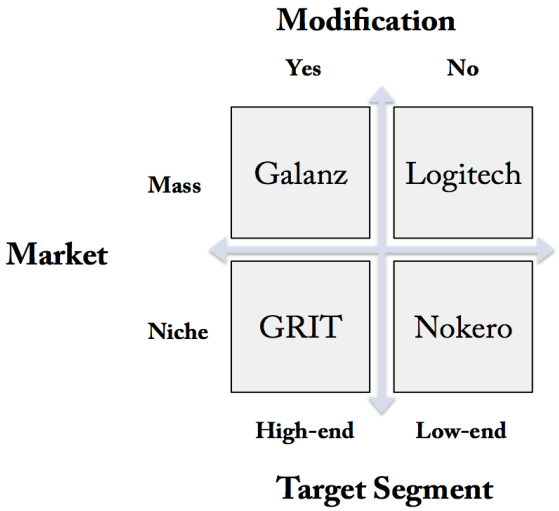

Figure 13 - Matrix of cases in markets vs. modifications

6.3.4 Distribution to developed market customers

With respect to the cross-country innovation diffusion approach, the most common strategy observable is the *waterfall* diffusion strategy, i.e. the companies started in the emerging market, sometimes launched the product afterwards in other emerging countries, before diffusing it into the developed markets (Galanz, Logitech, GRIT). Based on the analysis of all our cases, we noticed that this is the most common approach for large MNEs. The Start-Up Nokero, on the other hand, chose to make use of the in section 6.2.3 mentioned global virtual networks and to directly launch the product globally instead of focusing on emerging markets isolated (*sprinkler* diffusion strategy). With less headquarters constraints, no specific Western market requirements and no fear of cannibalization, Nokero was able to directly distribute its products also to Western consumers through its website, instead of having to develop a specific market entry strategy or product adaption.

Connected to the waterfall diffusion strategy is the question of how long time the companies waited until diffusing the product from the emerging into a developed market. It took Galanz and GRIT around eight and six years respectively to diffuse the products into developed markets, while Logitech diffused the product to Europe after only five months. We consider that the determinant of the time frame is (1) the company's current distribution channels, and (2) if the product needs modifications. As Galanz originates from China, it had to develop its distribution channels in developed countries to be able to diffuse the microwave oven. Even though GRIT originates from the US, the company as well started out in emerging markets, and thus had no established grounds in developed markets. Furthermore, for both of the cases, modifications had to be done that took years to establish. Logitech, on the other hand, already had its distribution channels to push out its product with no modifications, and thus only needed a few months for the diffusion to developed markets.

6.4 Relationship among the product characteristics, market dynamics and company-internal processes of Reverse Innovations

Based on our research we observed that companies commence innovating for emerging countries due to the growing competitiveness of emerging country companies and the growing importance of emerging markets. In order to compete in that market, the resulting Reverse Innovations are low cost, low-margin products with a focus on technology that target the biggest customer segment in emerging markets, the low-end customers. Moreover, most of the Reverse Innovations are alterations of existing products (continuous innovations) that are innovative due to their new outperforming price-performance ratio. In order to achieve this performance and to make the product most valuable for emerging consumers, most companies apply a frugal innovation approach, use local R&D teams and the latest technology. As a result, most companies need to change their business model in order to conduct Reverse Innovation. These innovations are then taken into the developed markets as companies observe a demand for value-for-money products in those markets. In addition, the companies want to make the low-cost, low-margin business model more profitable by gaining higher economies of scales. That is why the companies target the low-cost consumer in developed countries. Targeting this segment in most cases also avoids expensive and time-consuming modifications. In addition, due to the new innovation approach, the Reverse Innovations oftentimes show to be more profitable than existing products in the developed markets. Market dynamics that facilitate the diffusion of Reverse Innovations into developed markets are among other things global technology and communication improvements that lead to an interconnectedness between

emerging and developed markets and their consumers. *See Figure 14 for a summary of the relationships among the three research questions.*

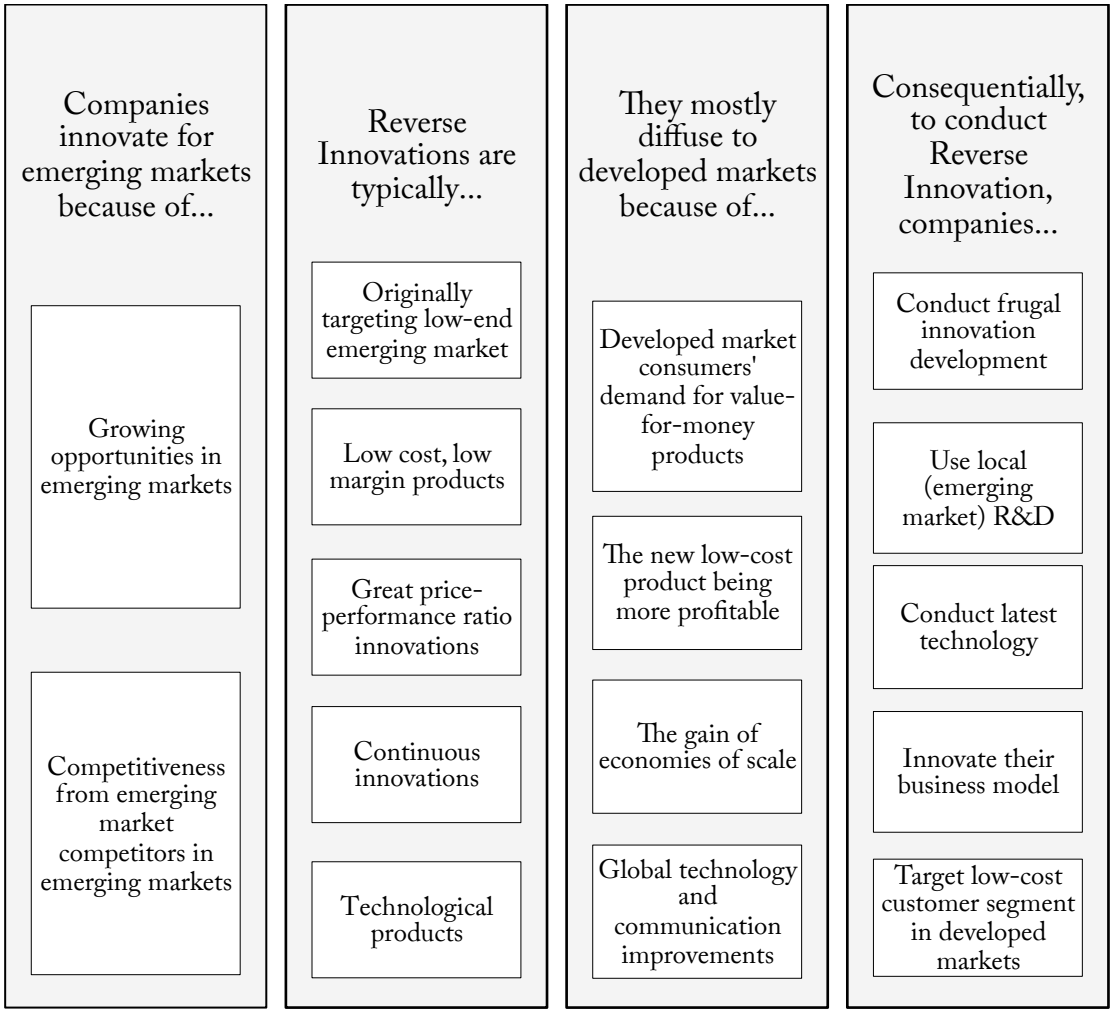

Figure 14 - Relationship among the three research questions

7 Conclusion

This chapter provides an overall picture of Reverse Innovation by summarizing the key findings of our analysis.

Contributing to existing research, our study identified two main reasons why companies commence innovating for emerging countries: Due to the growing competitiveness of low-cost emerging-country companies and the growing importance of emerging markets, companies either have to defend their market position and/or strive for growth opportunities in emerging markets. In order to attract emerging market consumers, companies have to offer low price points and an extraordinary price-performance ratio due to the economic constraints of the low-cost consumers. Supporting existing research, our study further showed that this could be achieved through a frugal engineering approach, as it leads to the development of valuable products for emerging-market customers, and appears to be more beneficial when taking the product into developed markets.

Furthermore, our research adds to existing definitions of Reverse Innovations the new insight that most of the innovations are continuous innovations, i.e. alterations of existing products, and not completely new products, especially when one considers the innovations in the context of the developed country. This correlates with the finding that Reverse Innovations are not so much about innovating the product itself but rather innovating the development process (i.e. business model innovation), thereby achieving the innovation's unique selling proposition in the developed market of an extraordinary price-performance ratio. Our study further suggests that not all Reverse Innovations are disruptive innovations, which thus contradicts Hang et al.'s (2010) proposition.

Contrary to the hypothesis of Govindarajan and Ramamurti (2011), we could not find a clear competitive advantage of emerging countries in developing Reverse Innovations. In contrast, there were slightly more developed-country companies. However, supporting previous research, what seems to be advantageous with respect to product development is to have local R&D teams in order to overcome the familiarity trap and to be better able to develop products that suit the needs of the emerging-country consumers. That might be the reason of why we observed a majority of MNEs involved in Reverse Innovations. Those might have more resources not only with respect to employees' diversity but also to put up local R&D centers.

The study further identified the opportunity to achieve higher economies of scale and revenue as a common decisive motive of why a company chose to take the innovation the reverse. For that purpose, the companies mainly focused on finding similar customer segments within the Western markets. Connected to the growing demand for inexpensive or value-for-money products in today's Western markets, most of the companies targeted the low-end segment when taking the innovation the reverse. Extending existing research, we found that the need of modification of the product for the developed market is depended on the product characteristic (sophisticated or basic necessities products) and target market (mass or niche). Furthermore, this study adds a theoretical perspective to why the innovations go the reverse: The innovation's characteristic influencing its diffusions into developed countries from a customer perspective were the product's relative advantage, comparability and less complexity. The diffusion of Reverse Innovations into developed markets was further found to be explained with Beise's (2004) lead market theorem. However, the theorem has to be adapted in the way that a lower budget of the developed-market consumer, compared to a higher budget, triggers the diffusion.

Furthermore, our study added to existing literature by analyzing the diffusion strategy and target market in developed countries. We observed that the global interconnectedness of the world facilitates the cross-country diffusion of Reverse Innovations. However, most of the time, companies chose to gradually diffuse the innovation from emerging into developed companies (waterfall diffusion strategy). We further identified that the company's market origin affected the target market in the developed country: Developed-market companies tend to introduce their Reverse Innovations mainly in the low-end mass market, whereas emerging-market companies target the mid- to high-end mass market of the developed market.

Finally, our research investigated the dimension of developed-market impact and its underlying factors. The low-cost business model is very competitive in the developed market, as many companies were not only able to attract the mass market of the developed countries, but also to change the market structure, e.g. successfully forcing out some competitors. Especially companies offering sophisticated products to the low-end market were able to attract the developed markets' mass market. For Reverse Innovations satisfying basic necessities, it appeared in general be more difficult to reach the developed countries' mass markets.

8 Discussion

This chapter provides an in-depth discussion of the results of the analysis, both with respect to managerial and theoretical implications. Furthermore, we make some general reflections about the impact and consequences of Reverse Innovation, followed by methodological reflections, and future research suggestions.

8.1 Managerial Implications

8.1.1 Five factors for successful Reverse Innovations

Our research illustrates that Reverse Innovation is a growing phenomenon that we suggest will affect and form the Western markets in terms of consumer preferences and values, industry actors and innovation grounds. In order to be competitive on a global market today, we imply that Reverse Innovation is the appropriate approach, for both emerging- and developed-market enterprises. Managers of developed-country MNEs should first be aware of the growing competitiveness of emerging-country MNEs. As they appear to have local experts in frugal (low-cost) innovations due to their daily experience of resource and economic constraints, emerging-country MNEs could easily take over market shares in the low-cost market segment of both emerging and developed countries. Second, managers from developed-market MNEs should evaluate emerging markets, specifically the low- to mid-end customers of emerging countries, as a business opportunity, especially in the face of the growing saturation of developed markets. As found in our research, the origin of country is not an important factor in the successful development of Reverse Innovations. What is crucial for implementing successful Reverse Innovation, though, are five factors.

To start off, companies developing products for emerging markets have to apply a frugal instead of a Glocalization approach. The latter might have worked well in an era in which emerging markets did not offer many opportunities. However, if not changing strategy, managers conducting Glocalization will be held with a low-cost low-quality product and will not be able to compete with emerging-market companies offering products with a great price-performance ratio.

Second, managers should implement local R&D teams in the targeted emerging market that get plenty of rope and flexibility from the Western markets' headquarters. This is to prevent the innovators from becoming constrained by the Western previous innovation patterns.

Third, what became apparent in our research was that Reverse Innovations do not have to be completely new innovations. In contrast, they are oftentimes alterations of existing products, attracting both emerging- and developed-country consumers with a great price-performance ratio that has never been achieved in either market before. At the same time, we identified a tendency that customers are increasingly attracted by products having fewer features and complexity and that are easy to use. Thus, the focus in product development should be on altering the production process and business model in order to achieve good quality at an extra low price. A possible strategy that has shown helpful is target costing, as in the case of GRIT.

Fourth, based on our research it could be observed that sophisticated products, oftentimes technological ones, that target the low-end market of developed countries had the highest chance in attracting Western mass markets. As Reverse Innovations usually strive for a high sales volume due to their low profit margins, companies therefore should try to develop these kinds of Reverse Innovations in order to increase their chances of reaching the mass market of the developed market, growing their market share and possibly eliminating competitors.

Last, we suggest to managers that they acknowledge the expected time frame of reversing the innovation into developed markets. If a company lacks current distribution channels in developed markets or if the product requires modification, the diffusion into developed markets will become time consuming and can take years. During that time, there might already be other companies taking the opportunity. However, if the company already possesses developed-market distribution channels, and no product modifications are needed, our research showed that the product could be diffused under less than half a year. Companies that want to make use of opportunities in emerging and developed markets should therefore implement flexible and fast decision-making processes that facilitate a fast spread of Reverse Innovations into developed countries and thus lead to a fast increase in economies of scale, profitability and revenues.

When diffusing the product into developed markets, our case studies illustrated that product cannibalization due to the new low-price point has not become a problem for the companies. On the one hand, those kinds of products usually attract a different customer segment. On the other hand, the low-price products often opened up new business opportunities or the companies could take away market share from no-name low-price products. In general, managers should view Reverse Innovation as an opportunity that despite lower revenues from each unit sold brings massive economies of scale that drive up profitability to a new level due to the high sales volume in emerging markets.

8.1.2 Reverse Innovation as the new global strategy

In our globalized world, focusing on developing products for Western markets is not enough to remain competitive. First, emerging-market companies can nowadays easily leapfrog Western technologies thereby being able to disrupt the Western market with their products, and take away significant market share. Second, consumers' needs and insights have converged, which brings huge growth opportunities. Reverse Innovation has shown to be a valuable strategy for providing innovations for both emerging and developed countries. We suggest managers consider applying this approach, as our case companies came up with innovations that were not only more profitable but also attracted a greater amount of customers. Furthermore, without changing strategy Western companies run the risk of missing the opportunity to broaden their expertise into emerging markets. By not investing in emerging economies, MNEs limit their strategy to using emerging markets as a production and export base for global markets, instead of gaining revenue and economies of scale. Consequently, Reverse Innovation is an opportunity for global operating companies to bring their innovativeness and profitability to a new level.

8.2 Theoretical Implications

As a result of our research, the diffusion of innovation based on the innovativeness of the adopter (Rogers, 1962) has to be updated in the case of Reverse Innovation. Following the argumentation of Rogers (1962), the bottom of the pyramid consumers in emerging markets would be Laggards from a socio-economic perspective, as they possess the least amount of resources. In the case of Reverse Innovation, though, this social class shows to be the Innovators, i.e. the ones that first adopt the innovation within emerging markets. Thus, we can observe that having few resources is not contradictory to being open for innovations. On the contrary, since the bottom of the pyramid consumers did not have access to existing technologies before, they are in the case of Reverse Innovation leapfrogging Western consumers with respect to innovation openness and innovation adoption (Immelt et al., 2009). When looking at developed markets, we observe the same pattern: Although there might be some products, like the LFC, that target a (sophisticated) niche market, the majority of products with frugal product characteristics is directly adopted by the average consumer, i.e. the Late Majority and Laggards from a socio-economic perspective. Therefore, Rogers' (1962) approach of basing the innovativeness on resource availability does not seems appropriate in terms of Reverse Innovations. Yet, it has to be noted that our study identified Reverse Innovations as special kinds of products that offer latest technology at a very low price, thereby specifically targeting consumers with fewer resources. Moreover, these kinds of innovations do not create status, nor

do the consumers need a sophisticated knowledge to use them, which is contrary to Rogers' (1962) assumptions about new technologies. Irrespective of the above, when it comes to developing frugal innovations that have the potential to go the reverse, choosing the Late Majority and Laggards as the main target groups with their small monetary resources and low level of customer satisfaction seems most promising. In fact, for many disruptive technologies that have been developed recently, especially in the energy and technology industry, such as fuel cells, photovoltaic or satellite-based telecommunications, those customer segments in the emerging markets may prove to be the most attractive lead user and test market (Prahalad and Hart, 2002) due to the aforementioned openness towards new innovations.

As Reverse Innovations are not adopted in order to create status for the respective consumer but because they satisfy basic needs both in emerging and developed markets, the cultural distance between the two markets might not be prohibitory for the Reverse Innovation diffusion – as was the assumption of Takada and Jain (1991). However, one could argue that the successful diffusion of Reverse Innovations also depends on the product type. Products that do not focus on frugal characteristics but that are high status symbols like cars or other luxury products might be harder to diffuse from emerging into developed markets. With respect to such products, a favorable strategy might consist of following the example of Levi Strauss: When developing low-cost jeans for the emerging markets, Levi created a new brand, called Denizen. This strategy is likely to diminish the (luxury) brand dilution and a failure in the innovation's compatibility.

Last, we identify a need to update the product cycle theory (Vernon, 1966; 1979): We observe a new form of innovation that is developed and distributed first in emerging countries and then exported to developed countries. In addition, many developed-country companies did not only outsource their production to emerging markets but formed R&D centers there to overcome the familiarity trap and to be better able to develop products that suit the needs of the emerging-country consumers. Thus, in contrast to Vernon (1966; 1979) we identify an expansion of product development focus from the home markets of developed countries to emerging countries. Oftentimes, due to the price and/or other beneficial features of the innovation (Beise, 2004; Rogers, 1962), there are customer segments in the developed market that share the same needs or characteristics as the consumers in emerging markets. As a result and contrary to Rogers (1962), it is not the Innovators in the developed countries that first adopt the innovation but rather resource-constraint Western consumers (i.e. Late Majority or Laggards).

8.3 General Reflections – What makes Reverse Innovation so interesting

Based on the disruptive effects that Reverse Innovations can have on developed markets, it begs the question of why there are not more examples of Reverse Innovations yet. We have observed that there are still international companies following a Globalization approach, i.e. having a global product portfolio without focusing on emerging markets; an example would be Apple (Donne-Crook, 2015). However, through both this approach as well as Glocalization, companies miss the chance of growth opportunities by neglecting a huge part of the society. A strategy that we identify as something between the Globalization approach and Reverse Innovation is the strategy of Electrolux and their "idea-shifting". Reverse innovation development using a frugal approach could become quite costly as it oftentimes forces companies to change the entire production process. Therefore, for a global company, an "idea-shifting" approach might be the most valuable as it is less resource intense than Reverse Innovation but is still able to attract the low- and middle-end customers in emerging markets.

Another reason for the reluctance of implementing a Reverse Innovation strategy yet, could be the fear of product cannibalization and changes of power within companies. Nowadays, the boards and top management position in Western MNEs are still mostly staffed with Western managers (Financial Times, 2013). However, we live in a global and diverse world, in which emerging markets more and more contribute to the profitability of those companies. Thus, this fact should also be reflected in the composition of the leaders of MNEs.

The study of Reverse Innovations shows the imminent shift of the global landscape of innovations and power. Not only can we observe growth in emerging-market economies but also an increasing focus on emerging markets as innovation platform and target market. An already noticeable result is the growing competitiveness and self-confidence of emerging-market companies that also increasingly enter developed markets with their products (cf. Khanna and Palepu, 2006; Mathews, 2006; Hang et al., 2010). Due to a large amount of customers living in the bottom and middle of pyramid, two-thirds of the world's population, tapping into those markets with frugal innovations can bring a fortune to companies as well as at the same time prospering the poor (Prahalad and Hart, 2002). Prahalad and Hart (2002) call that "inclusive capitalism". This investment could result in minimizing social disintegration, political chaos and environmental damages (Prahalad and Hart, 2002). In the light of growing envy against rich Western countries, international commercial business strategies focusing on the poor might in

the future contribute to global stability and sustainability and closing the gap between rich and poor countries.

8.4 Methodological Reflection

The findings of this study must be considered in the light of several limitations, which, at the same time, posit promising future research avenues. Foremost, our study was limited by the amount of cases. This not only limited the amount of factors that were to examine but also produces a shortage of sampling facts for finding any statistical significant proofs (Yin, 1981). We, therefore, invite further research to confirm the results of this study by introducing more cases as they become available for research and to examine other angles of Reverse Innovation. Having experienced the difficulties in finding interviewees in order to generate primary data, we suggest that further research could solely focus on one enterprise alone in order to provide full depth of the phenomenon.

8.5 Future Research

We only had a small number of Start-Ups and small firms in our research that were involved in Reverse Innovations. Given an increasing number of Reverse Innovations, future research could therefore investigate if that is a general pattern: Are MNEs with their large resources in general better suited to develop and scale-up Reverse Innovations, than NGOs, NPOs or small Start-Up firms? In addition, our study did not identify a specific category of product or industry that showed to develop most of the Reverse Innovations. With that in mind, however, there might be specific categories that are not suited for Reverse Innovations. Future research could explore cases in which an intended Reverse Innovation failed. Another interesting topic that could be further investigated is the influence of external constraints on Reverse Innovation development such as the impact of the political or cultural environment. In addition, research about Reverse Innovations has so far only been qualitative. However, it might also be interesting to use quantitative research methods in order to analyze from a developed country consumers' perspective, why they chose to adapt the innovation. Lastly, our study showed that Reverse Innovations were mainly launched in India and China. The developed country target market showed to be in most cases the US. Yet, we did not further investigate if there are specific country pairs of emerging and developed countries that make Reverse Innovation diffusion specifically successful and what specific characteristics of the respective countries lead to the successful diffusion. Future research could investigate that.

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Appendix I – Interview Questions

The questionnaire used in the interviews. This one is from the interview with Steve Katsaros.

A background of the interviewee, company and product	• An introduction of the interviewee • When and how you came up with the idea to develop the solar light bulbs? • Please describe when, how and where you researched and developed the product, to get to the point where Nokero is today
The development and need of the product in emerging markets	• What country (or countries) did you initially launch the solar light bulbs in? • How was the consumer behavior/situation before the launch? (e.g. lack of electricity and need of the solar light bulb)
The launch of the product in emerging markets and its effect on the consumer and market	• How did you manufacture and distribute the first solar light bulbs? • What were the biggest challenges in getting the product to the emerging market? • What was the reaction from the consumers? • How did the sales development look like the first year, and in what markets? • What product or what competitor did you compete with? (What product did the solar light bulb replace for the consumer) • How did the product change the customer's behavior and the market?
The launch of the product in developed markets and its effects on the consumer and market	• When and how did you start selling the solar light bulb to the United States/Europe? • What trigged you to launch the product in developed markets (e.g. taking it back to the United States) • Who is your customer/consumer in the United Sates/Europe? • What did the solar light bulb replace for the consumer in the United States/Europe? • What was the consumer's reaction at the launch? • Did you have to make any adjustments (performance or price) of the solar light bulb when selling it to the United States/Europe? • Did you grab sales from competitors of regular light bulbs or rather open up a new market for the solar light bulb? • How has sales developed throughout the years, and in what markets do you sell today?
Personal and company view on Reverse Innovation	• Do you believe that there will be an increasing amount of innovations from emerging markets to developed markets, which will change the product landscape of the developed markets? • Is there a specific type of product category that is especially suited for Reverse Innovations, in your opinion? Why? • In your view, why is this Reverse Innovation happening now?

Figure 15 - Interview guide

Appendix II – The Economic Emergence of China

One emerging market, which plays a significant role in our thesis, is China. According to a study by McKinsey (2013), the country has recently experienced a tremendous growth of its middle class market, leading to shifts in consumption dynamic and to a more globally oriented mindset. McKinsey (2013) defines middle class as individuals with a yearly income between USD9,000 and USD34,000. This is the yearly average income of Brazil and Italy respectively. According to the study, in the year 2000, only 4% of the Chinese urban household belonged to that income range. However, the growth since then has been incredible: already by 2012, a total of 68% of the Chinese urban households reached the range, gaining tremendous purchasing power. By 2022, it is expected to be even 75% (McKinsey, 2013).

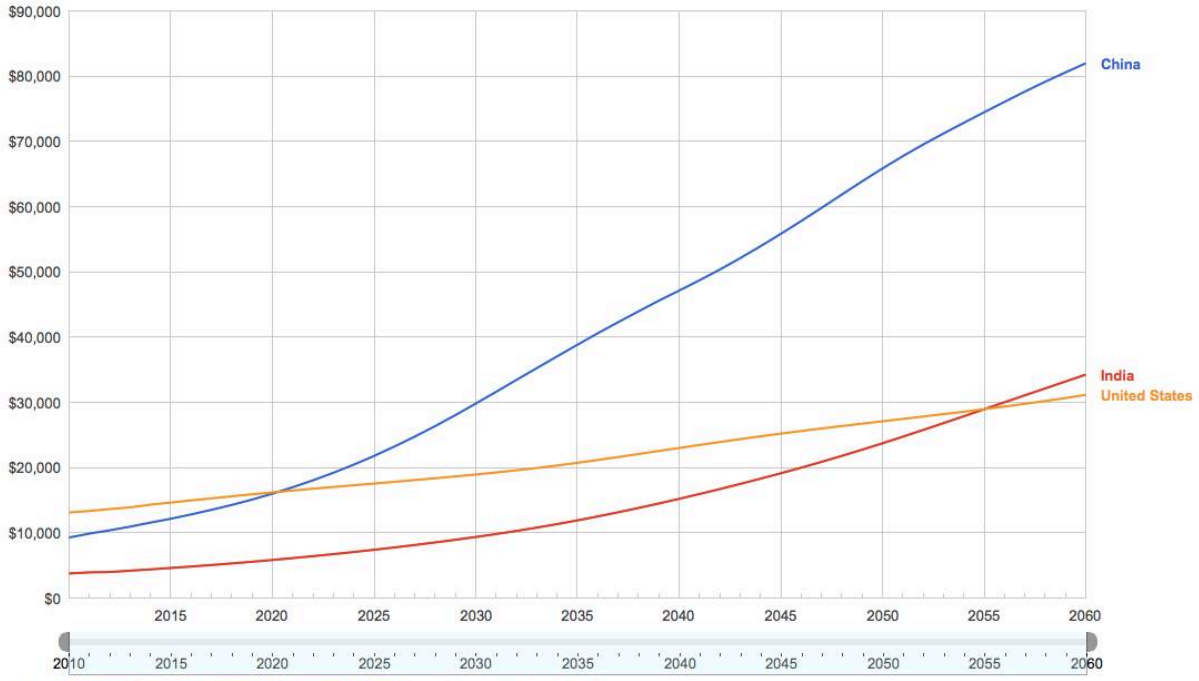

Figure 16 – Development of gross domestic product at PPP (billion USD 2005) among China, India and the US. (Source Frederick S. Pardee Center for International Futures)

Appendix III – Galanz microwave

Figure 17 - Galanz microwave, model "UOVO" (Source: http://www.galanz.com/pages/product_info.aspx?catid=7%7C8%7C43%7C5)

Appendix IV – Logitech's China-developed mice

Figure 18 - Logitech model MK 240 (Source: https://www.youtube.com/watch?v=Ns6FZ387wxg)

Figure 19 - Logitech model MK 345 (Source: http://www.logitech.com/en-hk/product/wireless-combo-mk345)

Figure 20 - Logitech model G 302 (Source: http://gaming.logitech.com/en-us/product/moba-gaming-mouse-g302)

Appendix V – The Leveraged Freedom Chair

Figure 21 - The Leveraged Freedom Chair for emerging and developing markets (Source: http://gear.mit.edu/Research_Projects/LFC.html)

Figure 22 - The Leveraged Freedom Chair for developed markets (Source: http://mass.innovationnights.com/products/leveraged-freedom-chair)

Appendix VI – Nokero's Solar Light Bulb

Figure 23 – Nokero model N202 (basic solar light bulb) (Source: http://www.nokero.com/N202-Solar-Light-Bulb-p/n202.htm)

Figure 24 - Nokero model N222 (with USB port) (Source: http://www.nokero.com/N222-Solar-Light-Bulb-and-Charger-p/n222.htm)

Appendix VII – Case Description

Enterprise	Company Origin	Innovation	Product Category	Emerging Market Launch	Developed Market Launch	Need, which triggered the innovation	Innovation specifics	Reason for reversed innovation	Sources of data
GE Healthcare	US	ECG machine	Healthcare	India	US and Europe	Demand for a portable ECG machine (smaller size and lighter weight) for rural market, at a few % of the initial costs.	The new ECG machine weighted less than a coca cola can, had the size of an iPad, operated on battery, and was easy to operate. Further it cost significantly less than its precursor.	Low price and size mattered. Price per test is dramatically lower (from USD5-20 to USD0.2 per ECG test).	Govindarajan, V. and Trimble, C. (2012b) 'Reverse Innovation: Create Far From Home, Win everywhere', Harvard Business Review Press
GE Healthcare	US	Lullaby baby wormer	Healthcare	India	US and Europe	India had one of the world's highest mother and infant mortality rates. The Western world's incubators were not applicable in India.	The new baby warmer was 70% cheaper than traditional models. Further, it was easy to operate, and the Lullaby warmer also consumes less power than most incubators.	The product had as high performance as Western incubators, for a lesser price. 60% less power at start up and 20% less power consumed over 24h.	http://www.bbc.com/news/business-23817127
Haier	China	Washing Machine	Home appliances	China	US and Europe	Demand for a smaller, cheaper and energy efficient washing machines.	The innovation delivered a small washing machine with high, medium, and low water levels that could wash just one pair of underwear or socks.	Identified a need of smaller, lighter, energy efficient washing machines for smaller households and value-for-money customers.	Wang, Y. and Sun, J. (2012) 'Studies on Enlightenment of China: Haier Group's Transnational Operations to Chinese Enterprise', Studies in Sociology of Science, Vol. 3, No 2, pp.53-58
Galanz	China	Microwave Oven	Home appliances	China	Mainly US, Canada and France	Demand for a cheaper, smaller, electricity efficient microwave oven. Further, education about the microwave was needed.	The new microwave oven was smaller, cheaper, and a pioneer in additional features of the Chinese market (steaming).	Identified a need of smaller, energy efficient, and more features of the microwave oven, for smaller households and value-for-money customers.	Ge, G.L. and Ding, D.Z. (2007) 'A strategic analysis of surging Chinese manufacturers: The case of Galanz – Asia Pacific Journal of Management', Asia Pacific Journal of Management, Vol. 25, No. 4, pp.667-683.
Logitech	Switzerland	Computer mouse	Technology	China	US and Europe	The Chinese market had a need for a different product offering because the consumer usage differed (performance and features).	The new computer mouse had a significantly lower costs/price, but with the features of a high-end product.	Logitech noted that the need of a better wireless mouse would spread to the rich-world as well, plus they introduced it as an entry-level product.	Govindarajan, V. and Trimble, C. (2012b) 'Reverse Innovation: Create Far From Home, Win everywhere', Harvard Business Review Press
John Deere & Co.	US	Tractor	Agricultural machines	India	US	Demand for smaller tractors. India had smaller fields that needed more fuel efficient and cheaper tractors, which further had lower maintenance costs.	The new tractor, "Krish", was smaller, had less fuel usage, lower maintenance costs, to the same price as local competition Mahindra & Mahindra.	They identified need for features, which was innovated for "Krish". From India, they now ship tractors to 70 countries.	Govindarajan, V. and Trimble, C. (2012b) 'Reverse Innovation: Create Far From Home, Win everywhere', Harvard Business Review Press
GRIT	US	Wheelchair	Transportation	India/Africa /Brazil	US and Europe	Rural area consumers had a hard time using the developed market's wheelchairs.	The new wheelchair was able to travel up to five kilometers a day on varied terrain, could be locally repairable with local tools, and cost the consumer less than USD200.	Disabled individuals in developed market demanded the product to be able to be active and hike with a better performance.	Winter TED Talk 2012; Winter tedX talk 2014
Harman	US	Infotainment system	Technology	China & India	US and Europe	Need of cheaper infotainment systems, however with the performance as high-end systems.	The new infotainment system was offered at half the price and a third of the cost, with all the desired functions of the (primarily) emerging market, but also developed market.	Developed market consumers did not use all the features offered, and demanded a easy-to-use, value-for-money infotainment system.	Govindarajan, V. and Trimble, C. (2012b) 'Reverse Innovation: Create Far From Home, Win everywhere', Harvard Business Review Press
Mahindra & Mahindra	India	Tractor	Agricultural machines	India	US	Demand for smaller tractors. India had smaller fields that needed more fuel efficient and cheaper tractors, which further had lower maintenance costs.	The new tractor weighted 5.5 times less the old John Deere & Co. tractor, and cost about 10% of the price. Offers five years warranties and better financing terms than John Deere & Co.	Compete on a global base with John Deere & Co., and they found the niche market for hobby farmers in developed markets.	http://www.bloomberg.com/bw/articles/2013-08-01/indian-tractor-maker-mahindra-takes-on-deere
SOLAR Coca Cola	US	Solar powered cooler	Energy	India	Europe	Of 80,000 Indian villages that did not have any electricity, 25,000 had little chance of being connected to the power grid in the conventional way, and thus were in need for solar light electricity for storage in conventional stores.	The innovation was a cooler box, which had the capacity of 50 bottles of coke. It is charged by day to provide electricity by night. It could also charge mobile phones and gives light at night.	Used in sun-friendly areas to use less electricity.	http://articles.economictimes.indiatimes.com/2012-11-09/news/35014581_1_coca-cola-india-coke-ceo-atul-singh http://www.coca-colacompany.com/stories/coca-cola-india-develops-solar-powered-coolers-for-rural-areas

Nokero	US	Solar light bulbs	Energy	Africa	US	There was a need to rid the world of the dangerous, polluting kerosene lamps used in the emerging and developing world.	The new product was a low cost, solar rechargeable LED light bulb.	There was a demand of a niche market in developed markets away, where the new solar light bulb was better than today's options.	http://inhabitat.com/nokero-introduces-new-model-of-worlds-only-solar-light-bulb/nokero-n200/ http://inhabitat.com/rainproof-solar-led-bulb-could-illuminate-the-developing-world/
Renault	France	Low cost passenger car - Logan	Transportation	Romania	Mainly rest of Europe	Need of a low cost family car. Further, it had to have simple maintenance for local technicians, have a fuel filter and battery that can survive extreme weather conditions.	The new "Logan" car was offered at USD6,500 back in 2004 - without sacrificing quality and safety.	Demanded of low-end market in developed markets as well. Value-for-money customers.	https://hbr.org/2010/05/reverse-innovation-in-action-romanian-cars-on-the-german-au/
P&G	US	Razor blade	FMCG	India	US	An Indian male shaves differed from his American counterpart. He was typically far more price-sensitive, and shaved himself in a completely different way.	The new blade used 80% fewer parts, a plastic housing, and a single blade to minimize cost while preserving "good-enough" shaving performance. Razors and blade selling for USD0.30 and USD0.10 respectively (less than 3% of the American product's price).	A niche-market of Americans also liked to shave this way, with this kind of single blade razor.	https://hbr.org/2012/04/how-pg-innovates-on-razor-thin?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%253A+harvardbusiness+%2528HBR.org%2529 http://globalens.com/docfiles/pdf/cases/inspection/gl1429328i.pdf
Electrolux	Sweden	Refrigerator	Home appliances	Thailand	US and Europe	Demand for a flexible refrigerator interior.	The innovation became the industry's first fully customizable refrigerator. There are over 100 ways to organize and personalize the refrigerator by having a Custom Flex door has sliding bins and accessories.	The customers in the mass market in developed markets demanded this flexible door as well.	http://blog.nfm.com/2015/02/11/frigidaire-spacewise-entertainer/
Grameen bank	Bangladesh	Microfinance	Financial services	Bangladesh	US and Europe	A need for affordable micro-loans to poor borrowers, mostly targeting entrepreneurs in poor countries.	They introduced small loans. Interest rates were high, but they were much less than the poor would pay a black-market lender.	There are poor people in rich countries in need of micro financing as well.	http://www.huffingtonpost.com/thane-kreiner/from-there-to-here-social_b_1696080.html http://www.boston.com/business/blogs/global-business-hub/2012/12/reverse_innovat.html
Nestlé	Switzerland	Noodles	FMCG	Singapore	Australia and New Zeeland	A healthier noodle option was needed that still had the fried taste and was affordable.	They developed low cost noodle with 98% lower fat (total 3% fat in the noodles).	Healthy and budget trends in the developed world raise the need for the healthy noodles.	http://www.nestle.com/asset-library/documents/r_and_d/nestle-rd-brochure-2010.pdf
Nokia	Finland	Mobile phone	Telecom	India	US and Europe	Telephone density in rural areas was only 6%, and they demanded a cheap, emerging market preferences customized mobile phone.	The innovation resulted in an entry-level phone with a strong battery life and the basic features needed in India. Further it included a flash-light, dust cover and slip-free grip (for hot weather).	The same cheap phone was demanded by low-end customers in developed countries, as well as business with need of a phone with "good enough" features, but great performance.	http://ashusimsr.blogspot.se/2010/01/reverse-innovation-new-paradigm-in.html
Suzlon	India	Wind energy	Green Energy	India	US, Spain, Italy and Australia	Demand for a low-cost and more reliable alternative source of energy compared to the existing problematic power grid, especially in rural areas.	The innovation resulted in wind turbines (windmills), offered electricity at lower price and higher efficiency than peers.	Western markets demanded green power supply.	Hang, C-C., Chen, J. and Subramian, A.M. (2010) 'Developing Disruptive Products for Emerging Economies: Lessons from Asian Cases', Research Technology Management, Vol. 53, No. 4, pp.21–26.
Yadea	China	Electronic bike	Transportation	China	US and Europe	Chinese government implemented new regulations to reduce urban pollution by prohibiting gasoline-powered motorbikes, which led to a need of a new transport device.	The electronic bike was cheaper to own and operate than a motorbike, especially with the rising gasoline prices at the time, plus their zero emission overcame the new government regulation.	A green alternative of transportation, without gasoline was demanded.	Hang, C-C., Chen, J. and Subramian, A.M. (2010) 'Developing Disruptive Products for Emerging Economies: Lessons from Asian Cases', Research Technology Management, Vol. 53, No. 4, pp.21–26.
Philips	Netherlands	Solar stove	Home appliances	BRIC (Brazil, Russia, India & China)	US	Traditional stoves cause health hazards on account of the high smoke emissions, thus a new solution was needed in areas where electricity was not available.	The innovation was a stove made of steel with a fan, which runs on battery. The high end stove (USD40) cuts emissions by 95 percent whereas the smaller one (USD15) cuts emissions by 75 percent. And they both cut fuel consumption by 45 percent.	Rural developed market customers, as well as environmental friendly consumers needed the product.	http://ashusimsr.blogspot.se/2010/01/reverse-innovation-new-paradigm-in.html

Tata	India	Water purifier	Home appliances	India	US	Population got waterborne disease by drinking dirty water, thus a water purifier was demanded.	The innovation resulted in a low cost (USD20) water purifier with zero maintenance, that is extremely user friendly, not dependent on electricity and has a capacity up to 3000 liters.	The product was needed in rural developed markets areas such as in the countryside or in the army.	https://mykmspace.wordpress.com/tag/reverse-innovation/
Vodafone for Safaricom and Vodacom	Kenya	Mobile transaction	Transactions	Kenya	US	Workers in cities needed to send money back home to their families in rural villages and they did not trust the governmental banks. A solution that was secure and that saved transaction time was needed.	The innovation, M-Pesa allowed users with a national ID to deposit, withdraw, and transfer money easily with a mobile device. By using M-PESA, consumer's disposable incomes increased by 5-30%.	The developed markets adopted the mobile payment method for everything from internet purchase to invoice payment.	Saylor, Michael (2012). The Mobile Wave: How Mobile Intelligence Will Change Everything. Perseus Books/Vanguard Press. p. 304. http://www.economist.com/blogs/economist-explains/2013/05/economist-explains-18
Levi Strauss	US	Denizen Jeans	Clothing	China	US	Chinese consumers needed a smaller size and different shape than the average American jeans offered.	The new product offered primarily a slim fit model. Further, they lowered the price to half the current price of Levi's jeans in China.	Customers in developed markets also demanded a smaller size range, with a slim fit model.	http://www.ft.com/cms/s/0/0a7a1c2e-aaaa-11df-80f9-00144feabdc0.html