Closing the gap between frugal and reverse innovation

Lessons learned from the case of the Tata Nano

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Abstract

Title: Closing the gap between frugal and reverse innovation – Lessons learned from the case of the Tata Nano

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Background:
Emerging markets are growing and have become increasingly important for the global economy, while the growth of developed markets has slowed down. Emerging economies are the home of a new type of innovation that can help multinationals (both Western and local) to achieve further growth. Reverse innovation is a new approach that entails developing frugal products in emerging markets that are later introduced in advanced economies.

Aim:
To develop a framework of reverse innovation, and to use this framework to find critical issues necessary for the Tata Nano to enter developed economies. Hence, we develop our own definition and a model of reverse innovation that will be used in the analysis of the Nano, with a specific focus on: the search for reverse innovation features present in the case and the problems/obstacles in the reverse innovation process.

Methodology:
Qualitative approach using a single-case study based on predominantly secondary data. The case study of the Tata Nano was chosen due to its compatibility with our research aims.

Completion and results:
The case of the Tata Nano fulfills all but one of the requirements for a reverse innovation: the last step of the process or the transition of the innovation to a developed market. Several critical issues regarding the reversal process were identified and discussed.

Keywords: reverse innovation, frugal innovation, emerging markets, multinational companies, Tata Nano.
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1. Introduction

1.1. Background

“Innovation is to the 21st century economy what mass production was to the 20th century economy – the center of gravity for success” (Mercator XXI, n.d.)

The Greek philosopher Heraclitus who lived around 500 BC, maintained that the world is in a persistent state of flux (Knierim, n.d.), and that change is the only thing constant and real. Regardless of its magnitude, change is integral to people’s lives and to the business world. It sets things in motion and requires adapting to the new circumstances. Both individuals and companies witness many changes in the course of their life cycle related to shifts of political, ideological, geographic or societal nature.

Change is often brought about by innovation which can be considered both a scientific and a social phenomenon (Godin, 2008). Not only is it a driver of improvement in people’s lives and the society as a whole, but it also facilitates the work and everyday activities of companies. For example, the way people communicate with each other has been facilitated by several innovations, starting from the first telegraph invented in 1794 and later completely replaced by the telephone in 1877 (Bellis, n.d.b). Modern transportation was made possible by the emergence of the first automobile in 1769 (Bellis, n.d.a), while the emergence of the Internet whose beginnings date back as far as the 1960s and 1970s (Zakon, 2011), truly revolutionized every aspect of our lives. Examples like these are usually the result of the involvement of many; their emergence is to some extent dependent on the previously available technology and they are subject to further improvement. It is innovations like these, once adopted by the market, that make development and progress possible. The focus of this thesis is on business-related or commercial innovation activity undertaken by large multinational for-profit corporations as part of their business activities.

1.1.1. Overview of innovation and the modern-day business environment

In the study of organizations as part of the business literature, innovation has been one of the most important research areas (Quintane, Casselman, Reiche and Nylund, 2011). Researchers agree on the importance of innovation for economic growth (e.g. Brem, 2011, Christensen, 1997), and also for building and sustaining competitive advantages (e.g. Freeman, 1995 and

The term “innovation” itself is rather ambiguous and lacks a uniform definition (Adams et al., 2006 cited in Quintane, Casselman, Reiche and Nylund, 2011). For example, Schumpeter discussed innovation in a somewhat broad manner and explained it as the introduction of new goods, new methods of production, as well as discovering new markets and new sources of supply (1926 cited in Ebner, 2000), or as new combinations introduced by entrepreneurs that disrupt the previously established system (Ebner, 2003). In a similar fashion, Grant (2010) explains innovation as the commercialization of inventions and talks about new products/services and new methods of production. We perceive innovation as a business activity of companies and individuals that results in creating or uncovering something new and marketable (products, processes, technologies, etc.), either radically different or merely incrementally improved.

In terms of the origin and nature of innovations, Fagerberg, Srholec and Verspagen (2009) draw two clear conclusions based on innovation surveys both from the European Union (henceforth EU) and non-EU countries. On one hand, innovation shows high correlation with the level of development of the countries where it is taking place, but on the other hand, innovation is a world-wide phenomenon not limited only to advanced economies (ibid.). Therefore, the above mentioned authors’ standpoint is that innovation as a phenomenon is still mainly associated with the first-world or the advanced economies. Their second conclusion is supported by evidence from theory and practice showing that the conventional innovation pattern has undergone certain changes. Nowadays emerging economies¹ are also sources of innovation, albeit of a different kind which will be in the focus of the thesis. Which factors triggered those changes and what are the implications thereof?

In the contemporary business world, there are several factors that influenced the rapid shaping of a new economic environment, the most important being globalization, technology and

¹ In the thesis, we often use the terms “emerging markets” and “emerging economies” interchangeably, referring to countries such as the BRICS (Brazil, Russia, India, China, South Africa) that are undergoing rapid economic growth. The concept of emerging markets/economies will be further elaborated in detail in Chapter 3.
demography (Govindarajan and Trimble, 2005). Companies need to resort to innovation and entrepreneurship in order to succeed (ibid.). Some of the potential benefits that innovative companies can reap are first mover advantages, acquiring a deep knowledge of new markets, building a reputation of being problem solvers, etc. (Kanter, 1999). As an illustration of the importance of innovation to companies, “The Global Innovation 1000” study of Booz and Company shows that leading companies throughout the world spend billions of dollars on research and development (henceforth R&D) every year (Jaruzelski, Loehr and Homan, 2012). Innovation is also an important issue for many governments. Bel (2013) gives the example of the EU’s many innovation-fostering programs directed at its member states, and notes that many perceive innovation to be the ‘savior’ of Europe in its fight against competition from the emerging markets.

On one hand, large multinational corporations\(^2\) (henceforth MNCs) have faced a problem of further expansion and capturing new markets, while attempting to maintain stability and competitiveness in the light of the changing global conditions. On the other hand, we have witnessed the rise of emerging markets such as China and India, whose considerably higher economic growth rates could be interpreted as a warning that advanced economies might lose the lead when it comes to innovation and competitiveness. Emerging markets are the home of both rising and established companies such as the Indian Mahindra Group and Tata group, the Chinese Lenovo, Haier and Huawei, the Russian Lukoil, etc., that are successfully operating around the globe. The rise of the emerging economies should in no way be interpreted as a threat to the developed world, but rather as a positive change that could be beneficial to the global economy. It remains to be seen how far the rise of the developing world would go, but in the meantime, it is important to realize that emerging markets have become more than just sources of inexpensive labor or R&D destinations where products for the affluent Western consumers are developed. Companies should think about alternative ways of including these markets in their global strategy.

1.1.2. New solution for old problems: reverse innovation

\(^2\) Drucker (1997) describes multinationals as companies that have many subsidiaries in foreign countries and one home base. The subsidiaries operate as self-contained entities with a local focus. Transnational corporations (TNCs) are less concerned with national borders and regard the world as one market, a view often reflected in their transnational management structure (ibid.). In this thesis, MNCs refer to all large companies with operations in more than one country, disregarding the potential differences in their legal status or organizational structure.
In recent years, certain companies have tackled the problem of global expansion and competitiveness in a somewhat different way. Rather than the usual practice of offering their existing products to customers in emerging markets, some Western MNCs such as General Electric (henceforth GE) and Siemens seem to have started pursuing a different approach. These companies develop new products in emerging markets that, when later introduced to their home markets in advanced countries, improve their competitiveness and open up new growth opportunities. The products in question are frugal by nature, that is, they are entry-level to mid-range products originally intended for consumers in the developing world, and their development is based on delivering value by consuming as little resources as possible. In 2011, Siemens alone had over 160 such products on the market (Busch, 2011). GE have been named the pioneer of this new approach after the development of the first handheld electrocardiogram (ECG) for the rural Indian regions and a portable ultrasound machine developed by GE’s local teams in China for the Chinese market in 2002, both sold today on the U.S. market (Immelt, Govindarajan and Trimble, 2009). The subsequently written article describing this success story called “How GE Is Disrupting Itself”, was co-authored by GE’s CEO Jeffrey R. Immelt, and can be considered as the first scientific publication to discuss “reverse innovation” (Govindarajan, 2012b; Immelt, Govindarajan and Trimble, 2009). This term was coined by Vijay Govindarajan, Professor of International Business at the Tuck School at Dartmouth (Tuck School of Business at Dartmouth, n.d) and co-author of the aforementioned article, after spending two years at GE as their chief innovation consultant.

These events marked the emergence of a new type of innovation in literature and in business practice, one that challenges many of the established premises in this field. The stakes are especially high for Western companies who are invited to reconsider their traditional ways of innovating in order to pre-empt future competitors from emerging economies and potentially unlock new sources of growth. Reverse innovation is proposed as a solution for many contemporary problems that companies are facing and it is considered a new wave in the history of innovation and globalization with bright future prospects.

3 The concept of frugal innovation will be further elaborated in detail in Chapter 3.
4 “Reverse innovation” has no similarities with “reverse engineering”. The latter is defined by Rekoff, Jr. (1985, p.244) as “[...] the act of creating a set of specifications for a piece of hardware by someone other than the original designers, primarily based upon analyzing and dimensioning a specimen or collection of specimens”.
5 The term “reverse innovation” was used by Foxall (1989) but with a quite different meaning. He talked about user-initiated product innovations, where the industrial users, having come up with something new, attempt to capitalize on the innovation by marketing it themselves.
What is new about reverse innovation is its core philosophy of innovating from scratch and its reverse direction. Throughout history, almost all innovations have travelled from developed to developing countries (Govindarajan and Trimble, 2009). As Govindarajan (2012c) states: “Historically, multinationals innovated in a rich country like the U.S. and sold those products in a poor country like India”. The pattern of reverse innovation is actually reversed: now companies innovate in the developing world by creating frugal products suitable for the local customers and introduce those products back in the developed world. For this reason, it is said that reverse innovation challenges the conventional thinking about innovation. Both Western MNCs operating in emerging markets as well as local MNCs originating from emerging markets can engage in reverse innovation. Local companies are interested in the same benefits of going global as the Western companies – “[…] new customer bases, production platforms or innovation centres” (Khanna and Palepu, 2010, p.166). Products with reverse potential are ‘SMART’ products; current examples from practice tend to correspond to what Siemens defines as “simple, maintenance-friendly, affordable, reliable and timely-to-market” (Busch, 2011).

As promising as it may be, reverse innovation is not yet widespread among large Western companies. MNCs from the developing world might find it easier to pursue reverse innovation as the underlying principal of frugality is something better grasped by people from the developing world where resources are scarce.

1.2. Research problem

1.2.1. Previous research

Being a relatively new field, only a modest amount of literature on reverse innovation has been published by now. Namely, the first example from practice is said to date back to 2002 (GE’s ECG machine), while the first scientific article was published in 2009 (Immelt, Govindarajan and Trimble, 2009). By going deeper in the literature, however, it became apparent that reverse innovation is seen as tightly related to various other innovation areas that need to be considered in order to better analyze the concept of reverse innovation itself.

The literature review we have conducted revealed several areas within reverse innovation which have been mostly explored. To illustrate briefly, authors mainly: provide definition, interpretation and typology (e.g. Agarwal and Brem, 2012; Bound and Thornton, 2012; Corsi 2012; Govindarajan and Ramamurti, 2011; Ruan, Hang and Subramanian, 2012; Sehgal,
Dehoff and Panneer, 2010; Singh, Gupta and Mondal, 2012; Tiwari and Herstatt, 2012a, Zeschky, Widenmayer and Gassmann, 2011); discuss factors that foster the emergence of this phenomenon (e.g. Corsi and Di Minin, 2011; Hart and Christensen, 2002; Khanna, Palepu and Sinha, 2005; Prahalad and Hammond, 2002; Prahalad and Libeithal, 1998); and identify critical success factors, strategic implications and challenges, and examples from companies (e.g. Agarwal and Brem, 2012; Dawar and Frost, 1999; Govindarajan and Ramamurti, 2011; Govindarajan, 2012; Govindarajan and Trimble, 2012b; Immelt, Govindarajan and Trimble, 2009; Ruan, Hang and Subramanian, 2012; Zeschky, Widenmayer and Gassmann, 2011).

In addition to providing us with deeper insight into the topic, the literature review also uncovered certain inconsistencies and under-researched areas that call for more research for further development of the knowledge base. The tension which exists among authors mainly focuses on the definition, that is, it is not always clear what is and what is not included in the concept of reverse innovation.

1.2.2. Problem statement

Most of the literature on reverse innovation can be considered an early attempt to get to the bottom of this new strategically important concept for MNCs. Most scientific publications have been published within the last three years, while the broader body of literature of co-related topics contains publications from the last 10-15 years. One of the most prominent authors in this field, Vijay Govindarajan, strongly advocates for the benefits of this approach and provides plenty of inspiration on how to investigate this topic further.

The novelty of the topic could be the reason for the gaps in the theory and the lacking consensus. In our opinion, this is not the result of any particular disagreements among authors, but rather, the different interpretations of this new phenomenon in innovation literature are likely to be influenced by the fact that reverse innovation is in the early stages of its development. Perhaps developing a dominant logic in the field would require more time and additional research as the topic gains popularity, both among researchers as well as practitioners. To illustrate this point, Woolridge (2010 cited in Bhatti and Ventresca, 2013, p.2) states: “Sometimes frugal innovation is also referred to as reverse, jugaad6, or shanzhai innovation”, just to name few of the terms commonly found in relation to reverse innovation.

In this thesis, we challenge the interchangeable use of these and other related terms, and

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6 Jugaad stands for “improvisation” in Hindi (Govindarajan, 2012c).
contend that these are all different concepts that refer to different aspects of the reverse innovation approach. As Radojevic (2012, p.37) writes with regard to reverse innovation, “this concept still needs to be integrated with literature on locus, characteristics, and diffusion of innovation” and this is just one of the areas where more research effort is required.

The Indian MNC Tata group is one of those companies assumed to have been innovating in accordance with the new approach (Govindarajan and Ramamurti, 2011; Govindarajan, 2012; Hang and Subramanian, 2012; Tiwari and Herstatt, 2012a; Zeschky, Widenmayer and Gassmann, 2011, etc.). Among the ‘smart’ products in the portfolio of this global giant, one in particular has raised a global debate. The Tata Nano automobile is an innovation that pushed the envelope in the automotive world. This product is considered to be an iconic symbol of the Indian capabilities in the field of frugal innovation (Bound and Thornton, 2012) and a potentially interesting product for the advanced markets. The Tata Nano was announced as the future cheapest car on the roads of India, with a price tag of only $2,5007 (Read, 2012). Our analysis will focus on the intriguing case of this so-called “people’s car” revealed in January 2008 (Tata Motors, 2008). The problem arises from the fact that the company has announced the introduction of the Nano to developed markets several times already. However, the promise of entry in Europe scheduled for 2011 never materialized (Read, 2012).

1.3. Purpose and research questions

It has become apparent by now that further research on reverse innovation is not only justified but also crucial for contributing to the development of this strand in innovation theory. We are seeking to establish a connection between various related innovation theories so that reverse innovation can be better positioned as a literature concept. By doing so, identifying examples from practice could be facilitated and their analysis could be made easier. In addition, it is our goal to promote this topic and to advocate for reverse innovation as an approach worth considering by companies regardless of where they come from.

The purpose of this thesis is two-fold: based on a literature review, we aim to develop a framework of reverse innovation, and by using this framework we intend to find critical issues necessary for the Tata Nano to enter developed economies. Consequently, it is our goal to develop our own definition and a model of reverse innovation that will conclude the theory

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7 The price of 1-lakh (100,000 rupees) at the time of the announcement in 2003 was approximately $2,100 (Freiberg, Freiberg and Dunston, 2010). Since then, the price expressed in US dollars has varied due to the exchange rate.
chapter. Afterwards, the model will be used in the analysis of the Nano, with a specific focus on two issues: the search for reverse innovation features present in the case and the problems/obstacles in the reverse innovation process.

Therefore, the research questions are formulated as follows:

1. Based on the literature review, where does “reverse innovation” stand in relation to other innovation literature streams?
2. How can the case of the Tata Nano be understood and explained through reverse innovation theory?
3. What lessons can be learned from the Tata Nano case with regard to reverse innovation?

The case of the Nano has not been sufficiently analyzed through the prism of reverse innovation yet. The answers to the research questions are expected to result in identifying challenges in going reverse that could be a lesson for other companies, as well as potential success factors that companies might consider implementing. Since we are interested in what is preventing companies from pursuing this approach more openly, we have chosen a product that has not yet succeeded in its intentions to enter developed markets. This enables us to focus on the obstacles and critical issues in the reverse innovation process.

In the context of emerging markets (India in particular) as growing centers of innovation, we investigate the phenomenon of reverse innovation through the perspective of a local MNC from an emerging economy. The research is expected to enable us to test as well as to supplement current theory, and contribute to the further advancement of the body of literature concerning reverse innovation.

1.4. Thesis scope, Limitations and Target groups

This thesis focuses on a product initially developed in India for the local market, and its endeavor to enter other mainly advanced markets. The thesis itself combines information from various knowledge areas. For example, other than various innovation theories, we discuss emerging and advanced economies, as well as the base of the pyramid\(^8\) (henceforth BOP) as a concept mainly related to the developing world. Additionally, information on global economic development issues and the topic of MNCs can also be found. Included are comparisons

\(^8\) The concept of BOP will be further elaborated in detail in Chapter 3.
between advanced and developing parts of the world, as well as outlooks for the future. The focus is placed on innovation in general and reverse innovation in particular, as a promising philosophy suitable to the current (and future) business environment. The thesis takes currently available theory on reverse innovation as its point of departure, in combination with prior and subsequent relevant theory from other areas, and seeks to further clarify and supplement the knowledge regarding this topic. Concepts such as emerging markets and the BOP serve mainly to describe the context of the research problem but will not be investigated in great detail. The same applies to the product which is in the focus of the case study – the most important design aspects and technical specifications will be described, but details from automotive engineering lie outside of the scope of this thesis. Moreover, the thesis does not attempt to provide an in-depth analysis of the automotive industry, or to deliver an exhaustive study of the main markets in the focus of the research.

As mentioned previously, the fact that the thesis is dealing with a rather nascent theoretical field could be seen as a potential challenge, but it also offers plenty of opportunities for the authors of this thesis to give their contribution in this field. The geographical distance from the company and the particular emerging market which are in the focus of the thesis, could also be regarded as a limitation when it comes to the possibility of conducting an in-depth research and collecting primary data.

This thesis is directed toward forward-thinking business practitioners as well as students, researchers and everyone else with interest in the recent trends in innovation literature. By using up-to-date scientific material, the information and analysis presented are current and relevant to the main topic. The thesis offers food for thought on the future landscape of the business world and invites researchers to continue the efforts of developing this literature strand.

2. Methodology

Every research effort could benefit from an action plan or a general direction to follow during the process. A strategy with a clear goal and tools of achieving that goal could provide researchers with a structure, and serves as a guiding light during the research. The value of a research strategy goes beyond providing mere check points and deliverables to keep authors on the right track in the pursuit of answers. The choice of a research paradigm also influences the
definition of the research problem, the research questions, and the methodology and research approach (Kapoulas and Mitic, 2012). In the following sections, we shall outline our own research strategy, research methods and techniques that have guided us through the research process.

2.1. Research strategy

The research we have conducted for the purpose of this thesis consists of two consecutive parts: a theoretical investigation of reverse innovation as a contemporary phenomenon shaping our research questions, and an empirical component outlining a real-life example (the Tata Nano) of a product whose analysis enables us to achieve the pre-set research goals.

The information we have gathered and presented on Tata and its Nano is mainly in a textual and narrative form, describing the events and circumstances throughout the product life cycle from idea to market introduction to future prospects. Supporting evidence in numerical and visual form (such as financial figures, graphs and tables) is included to counterbalance the descriptive nature of qualitative data. For this reason, we can describe this thesis as being primarily based on qualitative research because it “[…] does not measure, it provides insight” (de Ruyter and Scholl, 1998, p.8). A fair amount of quantitative data is included to ensure a more comprehensive portrayal of the research problem at hand, but in essence, our research strategy mainly relies on words rather than numbers and could therefore be described as qualitative (Bryman and Bell, 2007). Qualitative research is a “conscious search for meaning and understanding” (Gummesson, 2005, p.311 cited in Kapoulas and Mitic, 2012, p.360), and making sense of the gathered data which is, to a large extent, the purpose of our research.

The empirical data is in the end contrasted and compared with current theoretical premises sublimed in a comprehensive model of reverse innovation, encompassing the most relevant aspects that enable us to describe the phenomenon. In other words, the empirical case of the Tata Nano is analyzed through our reverse innovation model in order to study our assumptions and develop answers to our research questions. In this context, we as authors have also included our personal account of the events surrounding the Nano and our interpretation of the company’s actions, in order to make sense of the data and analyze the case.
2.2. Research philosophy

In our research, we take what theory and practice offer and we make an effort to extract the relevant meaning and present our view of the reality. Our research involves the social world of people and their institutions, and hence requires a more humanistic and subjective approach. Therefore, the guiding philosophy of this research is closer to the epistemological stance of interpretivism. Research strategies differ in terms of their orientation according to epistemology or the notion of determining “[...] what is (or should be) regarded as acceptable knowledge in a discipline” (Bryman and Bell, 2007, p.16) and ontology which “[...] refers to assumptions about the nature of reality [...]” (Wynn, Jr. and Williams, 2012, p.788). We follow the interpretivist approach in our quest for answers in that we are more concerned with the thought objects constructed by individuals who interpret phenomena in a subjective manner, or in other words, with the social constructs of what people consider to be reality (Schutz, 1962 cited in Bryman and Bell, 2007).

From an ontological perspective, we acknowledge the socially constructed character of our investigated phenomenon of reverse innovation. We take into account the different groups of actors whose interplay and interconnectedness influence the phenomenon and the changes it goes through in time. Investigating the Nano in abstraction of its context and the intertwining factors that influence the phenomenon would most likely not yield complete results. The way we approach the research can be said to resemble the ontological orientation of constructivism which posits that social objects are the product of social interactions; they are believed to be undergoing constant revision (Bryman and Bell, 2007).

We begin the research by analyzing the theory on which we put most of the emphasis and use it as a basis for our assumptions. Those are later tested through the empirical data from the case study and used to generate new theory which is part of the aim of our thesis. Hence, part of our findings after the analysis could be seen as new and potentially generalizable inputs for the theory of reverse innovation. Therefore, our research can be described as predominantly deductive in combination with induction for better research results. Our observations mainly stem from theory but some of the subsequent findings after the theory has been tested can also feed future theory (Bryman and Bell, 2007). We have detected elements of both approaches and we estimate that excluding either one of them would not serve the purpose of the thesis.
The possibility to conduct theory testing by means of a qualitative approach is confirmed by Bryman and Bell (2007).

2.3. Literature review

Initially, we were intrigued by the idea of reverse innovation mainly because of its novelty and unconventional character. As we set off to learn more about this topic, we became aware of the current lack of extensive literature which was persuasive enough for us as authors to make the final decision. The literature review was conducted in the period of December 2012 – April 2013 and the material gathered is exclusively in English. As a result, we compiled a database of several core publications and key authors, and a significant amount of supporting publications from related areas. The literature was mainly obtained from the Linköping University Library and its associated online database of books, scientific journals and other publications. Part of the material was found through the Internet. As expected, the initial keyword used for searching through the literature was “reverse innovation”. Afterwards, the search was expanded to include other closely related terms and theoretical fields. One of the results of the literature review was the discovery of many interesting examples from practice discussed in the context of our main research topic, some of which we considered going back to in the later stages of the thesis process.

According to Bryman and Bell (2011), the literature review is an integral part of every thesis and it constitutes the starting point of the research, providing the justification for the chosen research questions and determining the research design of the study. Hence, before deciding on the suitable research method, we have engaged in a detailed analysis of existing literature, searching for the previous work of authors in the field of reverse innovation and identifying potential areas of interest. The main idea behind conducting a literature review is to see what has already been written and to identify an area where we could make a contribution. Moreover, taking this step is in accordance with the deductive approach as described previously, in that literature forms the basis of our thesis from which our research purpose is derived. Theory provides the bricks for building our analytical framework and the lenses through which the empirical data is later analyzed.

Our literature review presented in Chapter 3 is conceptualized as a report and it resembles a written discussion on the previously published literature with regard to reverse innovation (Bryman and Bell, 2011). Moreover, the reason why we conducted such an analysis of the
2.4. Research method

For the purpose of this thesis, we set out to examine the Tata Nano due to several reasons. Our focus is on innovation coming from emerging markets that has the potential to result in developing globally attractive products. In this sense, China and India are one of the most commonly mentioned emerging markets as sources of a new kind of innovation that spreads to advanced economies in the later stages of its life cycle. Therefore, we have chosen one innovation from India whose development has attracted plenty of publicity in the recent years. As we are interested in examining the new innovation philosophy and the associated problems, this miniscule automobile's story serves as the vehicle to do so.

Our research is designed to contribute to refining a concept that needs further study, in an area where current knowledge is limited and where theory and research have only begun to develop. Moreover, the empirical data we have gathered serves to investigate reverse innovation as a contemporary phenomenon within its real-life context. In such a situation, using a case study is seen as an appropriate research method for this thesis (Darke and Shanks, 2002; Yin, 2009). Case studies are a common qualitative research method in social sciences, but they also represent a challenging task for researchers (Yin, 2009), as we have experienced ourselves throughout the research process. Cavaye (1996) stresses that case studies can take many different forms because of the absence of a standardized way of conducting case research. However, there are some parameters that can be used to determine the appropriateness of using a case study. For example, case studies are commonly based on a combination of qualitative and quantitative data (Darke and Shanks, 2002) and do not necessarily need to include direct observations (Yin, 2009). These are some of the features that can be identified in our research. Moreover, answering the research questions in our thesis requires developing a detailed understanding of the investigated phenomenon, and a case study is the right way to accomplish that (ibid.). Other research methods such as field study, action research, ethnographic research, etc., as described by Cavaye (1996), have been considered but later eliminated as unsuitable to the nature and purpose of our research.

Furthermore, we have chosen a single-case holistic study with a single unit of analysis, meaning that the case study is built around one particular product investigated within its
broaden context. A single-case study should be chosen when the case in question is critical, unique or extreme, typical, revelatory or longitudinal (Yin, 2009). The Tata Nano case satisfies more than one criteria and it is therefore justified to use a single-case study. Beyond any doubt, this case is unique in that an identical case demonstrating the far-reaching possibilities of innovation in the same industry cannot be found. Tata’s accomplishment in terms of product innovation is unmatched. However, this is where its uniqueness ends and it commonness begins. As touched upon previously, Tata Motors is not the first company to embrace frugal innovation, nor is it the most successful one. In that sense the Nano can be seen as a typical case of a product originating from an emerging market, attempting to make its way to the developed world and convey the spirit of frugal innovation to Western customers. More importantly, the Tata Nano is a critical case in that it is seen as an ideal basis for developing current theory and for formulating our research questions, which ultimately offers us the possibility for extending the theory in this field (Yin, 2009). As said, we have chosen the Nano since our research questions aim toward investigating the problems in reversing innovations which other completed cases might not have encountered.

Additionally, our case study aims to go deeper within the topic of reverse innovation to solve previously unexamined issues, or as Robson (2002 cited in Runeson and Höst, 2009, p.135) explains, we are “[…] finding out what is happening, seeking new insights […].” As a result, the case could be also explained as being an exploratory study which is in the spirit of the interpretivist orientation of qualitative research. The case itself plays a somewhat secondary role in the research and serves as a gateway for accomplishing the purpose of the research (Stake, 1995 cited in Backster and Jack, 2008). Being used as a vehicle of improving our understanding of the theory and as the basis for testing current premises and generating additional theory, the case study can also be described as instrumental (ibid.).

Moreover, the case goes back in time and follows the Nano’s development from the birth of the idea to the initial commercialization, up until the latest developments in the case. It seeks to make sense of the past events in order to test current theory and produce new findings for the future. Hence, the case was built on the basis of secondary data collected at a particular point in time by the authors of this thesis, and it reflects a series of past events originally observed and described by other authors throughout a longer time period. The secondary data is used to construct the events timeline with our specific research questions in mind.
The Indian Tata group was chosen because of its fit with theoretical propositions: it is an “emerging giant” – a large MNC based in an emerging market whose global operations can be seen as a competitive threat to established Western companies. Tata have innovated in the spirit of the new innovation philosophy coming from emerging/developing markets; the company has developed a product, potentially suitable for both local and global customers. At first sight, it might seem that the discussion centers upon one specific case but Tata Motors is one amongst several companies that have understood the importance of frugality. Therefore, it is our opinion that there is much to learn from Tata’s case and the conclusions we derive could be generalizable and hence, applicable to other cases as well.

2.5. Research techniques for data collection and analysis

To a large extent, the research in this thesis relies on secondary data which is information collected by other researchers, usually for a purpose different than ours (Ghauri, Grønhaug and Kristianslund, 1995). Despite our initial determination to collect primary data in order to obtain first-hand answers to our problem-specific questions, this option was abandoned as unfeasible. After establishing contact with the Assistant General Manager of Corporate Communications at Tata in Mumbai, India, we learned that arranging interviews would not be an option due to the fact that after the Nano was developed, most members have moved on to other projects or companies and would therefore be difficult to locate them. Another obstacle was the fact that not everyone who had worked on the Nano project were authorized to discuss project-related matters. Nonetheless, we were sent two books and a DVD by post, explaining the complete story of the Nano in a very descriptive manner abundant in details. We were assured that all information contained in the material is authentic and can be used for our case study. As noted by Ghauri, Grønhaug and Kristianslund (1995), the amount of available secondary data is often underestimated and it should be looked into, even when conducting a primary-data-based research.

For the purpose of collecting extensive data of high quality, we have turned to some of the most frequently used sources of data for case studies suggested by Yin (2009):

- Documentation - a vast amount of news clippings and other mass media outputs discussing the story of the Nano were collected, categorized and processed so that relevant information could be extracted. We believe this step is of utmost importance for maintaining objectivity in the analysis by presenting different points of view (the
media, experts from different fields, etc.) other than those from company officials. This helps to avoid bias and enables us to analyze the case study from different angles. By relying on different sources we avoid missing important details or questions that might have been raised by other authors.

- Archival records - we have also included publicly available documents such as statistical data (for example, Eurostat and other agencies’ reports), organizational documents from Tata (annual reports, sales and profit figures), various maps and charts with visually depicted data, reports and analysis from large consultancy companies, foundations, government and non-government agencies, etc.

- Interviews made by others – in written form (available online as journal and newspaper articles), as well as in audio (radio interviews) and video formats. The interviews were made with scholars, as well as company officials such as the former CEO of the Tata group and are a valuable source of information presented in its original form, i.e. unmodified by the interviewer.

In addition, we have been also using the following sources of data:

- Scientific publications in the form of articles and books, mainly retrieved from the Linköping University Library and various online sources,
- Films in a digital video format discussing the case of the Nano.

Furthermore, the case study is strengthened by a fair amount of supporting primary data. Primary data was collected in the form of two self-administered questionnaires sent by e-mail, which according to Williamson (2002) are the most common research instrument. This type of data collection technique was chosen over a structured interview because questionnaires are quicker to administer; they are more convenient for respondents, giving them the freedom to complete the questions in written and in their own time and pace (Bryman and Bell, 2011). Since the novelty of the topic “reverse innovation” cannot be emphasized enough, we saw an opportunity of using these questionnaires to receive input from authors who have prior experience in researching and writing about this topic. The questionnaires were sent to Nivedita Agarwal and Alexander Brem from the University of Erlangen-Nürnberg in Germany, and Simone Corsi from Sant'Anna School of Advanced Studies in Italy. It is important to note that in our case questionnaires were not used for their typical purpose of gathering data from a large number of respondents. Instead, they have been employed as an alternative to face-to-face interviews. When constraints are present, the self-completion questionnaires were seen as
a more feasible option due to the geographical distance from the respondents and the secondary position of the collected information which in our case plays only a supporting role in the research.

Following the previous discussion, it has become apparent that the vast empirical data for our case study comes from various sources and in various formats, requiring the establishment of certain rules and procedures for better data analysis. Before putting together the case study, there were several steps in the process, necessary for making the most out of the gathered data (Creswell, 2013). Namely, considerable time and effort was invested in collecting data and creating a database where all the material was placed and organized according to several different categories. The subsequent reading through the material, making notes, establishing patterns as well as uncovering contradictory and complementary lines of thought, were the most difficult parts of the data analysis and representation process. Lastly, the data was interpreted and presented in the case study mainly in a narrative form supplemented with visual depictions of the data.

2.6. Research quality

Acknowledging our obligation as authors to design and deliver a trustworthy and credible research, there are several quality criteria that need to be satisfied so that the research can have merit. Qualitative research invariably involves interpretation of the collected data and therefore, the researchers’ own explanations and reasoning will influence the data analysis.

Firstly, the validity of our research has been maintained by implementing several quality measures. In order to avoid subjectivity in the collection of data, we have used multiple sources of evidence in order to incorporate different opinions and points of view. Our process of data collection follows a pre-established procedure of collecting, classifying and storing data so that important information is not lost. We have followed official guidelines for the widely used Harvard referencing style to make sure that the conclusions can be traced back to their original source and that our contribution can be clearly distinguished from the work of other authors. In terms of the extent to which our case-specific research results of the Nano case can be applicable to other similar cases, basing our conclusions on analytics instead of statistics allows us to produce more generalizable findings. Moreover, by using theory to build a framework that specifies the conditions under which the investigated phenomenon of reverse innovation occurs, enabled us to increase the validity of the single-case study and the
It should be noted that the very nature of qualitative research like ours would most likely result in differing results if other researchers perform the same study and interpret the data through their own perspective. Nevertheless, the possibility to repeat the research and obtain identical results or the reliability of the research can be increased in many ways. For example, we have followed a case study protocol for the data collection process as described by Yin (2009), which outlines the general rules, procedures and guidelines for better reliability. An additional measure we have taken to strengthen reliability is building a case study database containing the complete data we have collected, as well as notes, documents, reports, tabular reports, etc. All of the information here was classified according to criteria such as the type of document and the major topics and research areas in our thesis.

In order to make sure that the quality criteria have been met and to strengthen the quality of the conclusions, we have taken additional measures in an attempt to construct a more complete image of the reality we have set to investigate. The theory chapter of the thesis compares several authors and their different viewpoints, necessary for drawing comprehensive conclusions. Therefore, the basis of the thesis is constructed from multiple theories. Multiple data sources were also used in the data collection process to avoid bias and increase objectivity. We have also included quantitative data in our primarily qualitative research in order to produce a more credible account of the events covered in the Nano case study. Lastly, the research has benefited from being jointly conducted by two authors whose different perspectives where constantly contrasted to identify complementary opinions and make use of the authors’ synergy to the fullest. The measures we have taken correspond to some of Schwandt’s (2001) and Stake’s (1995 cited in Runeson and Höst, 2009) recommendations for increasing the quality of our research.

2.7. Ethical considerations

Ethical issues might arise in any stage of the research process, from the early conception stage before conducting the study to the last stage of publishing the study (Creswell, 2013). Conforming to ethical standards has been one of our major considerations throughout the writing process. As authors of this thesis, we believe that having a strong sense of ethics can give merit to the research. We have complied with academic writing standards and followed
guidelines for proper referencing, in order to acknowledge the authors whose ideas we have build upon and to adhere to anti-plagiarism policies. We have identified various ethical guidelines (e.g. Bryman and Bell, 2011; Creswell, 2013; Robson, 2011) to which we adhered.

All contacted parties during the research were offered confidentiality, possibility of remaining anonymous, and if interested, a copy of our findings once the research is completed. Every e-mail sent as an attempt of contacting potential participants for our case study clearly outlined our research purpose and the issues we intended to discuss. We have sustained written communication with participants who gave their clear consent for participation. When developing the self-completion questionnaires, we were careful not to lead the respondents in a certain direction and we avoided disclosing our personal point of view. In addition, we have included different perspectives from different authors, both during the literature review and for the case study, and we reported the potential contradictions between authors. Moreover, we have made sure to use clear language appropriate for the target group of the potential readers of this thesis. Lastly, we are not affiliated to anyone and have no vested interest in the outcome of the research other than the quest for insights and answers.

3. Frame of reference

The following section is the outcome of our literature review and outlines the existing theory on reverse innovation, as well as the related theoretical fields. The frame of reference combines different viewpoints and plays a crucial role in describing the overall context of reverse innovation. It also builds the analytical framework which will be used in the next chapters.

3.1. Introducing reverse innovation

3.1.1. Conventional understanding of innovation

The impact of reverse innovation on the current knowledge about innovation is significant, as it requires reassessing the very nature of innovation as we know it. Simply put, “reverse innovation refers to the case where an innovation is adopted first in poor economies before ‘trickling up’ to rich countries” (Govindarajan and Ramamurti, 2011, p.191) as opposed to the traditional flow of innovation going from developed to developing countries (Govindarajan and Trimble, 2009). To be able to understand this change in the flow of innovation, it is necessary
to begin by explaining what the conventional innovation pattern stands for. Fagerberg, Srholec and Verspagen (2009) explain that innovation has been perceived as a typical “first-world” activity. It can be said that innovation has been usually understood as an activity or phenomenon moving from top to the bottom, or from the advanced economies to the other parts of the world, which in this case take on the role of followers and final recipients in the innovation chain. The authors maintain that innovation has been commonly associated with developing sophisticated products for affluent customers by investing significant resources in R&D. Although in a less glamorous form compared to the developed world, innovation is taking place in developing economies as well, and may be equally relevant there as in the rest of the world.

Raymond Vernon, an early advocate of globalization (The Economist, 1999), has elaborated on the origin of the conventional thinking about the nature and direction of innovation (Corsi, 2012; Govindarajan, 2012). Vernon (1966) discussed the development of new products for high-income consumers using the example of the U.S. which had the highest average income at the time. He assumed that U.S. companies would be the first to spot an opportunity for innovation. Vernon (1966) stated that the U.S. spent considerably more on product development than the rest of the world, as substantiated by several innovations that first appeared in this country, such as the tractor, the sewing machine and the typewriter. In the second stage of the product life-cycle, when the product starts to mature, the demand in other advanced economies such as those in Western Europe would start to grow and the innovation would spread there as well (ibid.). Only standardized products in the third stage of the life-cycle were associated with less-developed countries. Hence, innovation was seen as an activity stemming from developed countries and spreading to the rest of the world.

Vernon (1979) later revised the usefulness of his product life cycle model when other developed countries such as Japan and Europe started progressing and increasing their innovation activity. By building a network of subsidiaries, companies from innovation-intensive industries began to move their production, at first to more familiar countries but later on other regions received attention, too. An analysis of 180 U.S. companies showed that by 1975, most of their profit was coming from Asia, Africa, and the Middle East (ibid.). Vernon (1979) explained that the developed domestic markets were still the ones providing the stimuli for the companies’ innovation activity and the home field was also their preferred location for innovating, mainly due to the presence of skilled workforce. The author contended that, in general, there were companies that produce globally standardized products (part of those also
engaged in local adaptation) and companies that remain focused on the home markets but outsource production to foreign subsidiaries (ibid.). As far as the emerging markets were concerned, Vernon (1979) admitted that there are some indications that innovation activities are taking place in fast-growing economies such as Brazil, China and Mexico. However, the author suggests that those innovations could only go toward other, even less developed countries, but not toward the developed world.

In conclusion, the notion that innovation could come from the developing world was not present in innovation literature several decades ago. However, the fact that some of the less developed economies have experienced considerable growth in the recent years and have increased their global presence can be interpreted as a sign that the conventional views on innovation may no longer be entirely valid.

3.1.2. Measuring and comparing innovation activity between emerging and developed economies

To be able to analyze the conventional thinking of innovation in a contemporary context, we need to compare the innovation activity of various countries today. Therefore, it is necessary to use indicators that can approximate the level of innovation of economies, since a uniform measure is not yet developed. Acknowledging this problem, the European Council is working on the development of a single integrated indicator (European Commission, 2011b) that will greatly facilitate the comparison and monitoring of innovation activity. In the meantime, innovation remains to be evaluated by various different indicators.

In an attempt to test if Vernon’s premises (1966; 1979) are still valid today, a simple analysis of “The World’s Most Innovative Companies” list compiled by Forbes (2012) can help shed some light on the global innovativeness nowadays. Namely, Forbes classifies 100 companies according to the Innovation Premium9 (Gregersen and Dyer, 2012). When analyzing the list, one can conclude that the majority of the companies (43) are based in USA, while 42 are based in other developed economies (e.g. the UK, Japan, France, Germany, etc.). On the other hand, emerging/developing economies (China, Brazil, India and Malaysia) are the home of only 15 companies, or 15 percent of the total list (Forbes, 2012). This shows that the situation today is quite similar to what Vernon described in 1966 and 1979.

9 This indicator is derived when the companies’ net present value (based on future cash flows plus expected growth) is compared to their current market capitalization. When the market capitalization is higher than the net present value of future cash flows, the company has an innovation premium included in its stock.
In addition, Fagerberg, Srholec and Verspagen (2009) contend that measuring national capabilities in terms of one country’s technological, social and innovative capacity can be rather difficult in practice, although plenty of theory can be found on this issue. The authors name “science, research and innovation” (p.28) as one of the dimensions constituting national capabilities, and they suggest scientific publications, innovation counts, patents and R&D, as a sufficient aggregate empirical measure. The obvious problem that arises is the imperfect, insufficient or even non-existing data available for analysis which creates only a partial image of the reality. For example, the number of patents alone is generally not regarded as a perfect measure of innovation (Griliches, Pakes and Hall, 1987; Lanjouw, Pakes and Putnam, 1998 cited in Gallini, 2002, p.138) and patenting may not be very common in developing economies with undeveloped intellectual property (henceforth IP) protection systems (Fagerberg, Srholec and Verspagen, 2009). Furthermore, data is not being collected for many developing economies, which has also been a problem for the advanced economies until the beginning of the 1990s when the Oslo Manual\textsuperscript{10} marked the start of the effort to record innovation activity (Smith, 2004 cited in Fagerberg, Srholec and Verspagen, 2009). This problem is further exacerbated by the fact that the meaning of the term “innovation” may vary across different contexts (ibid.). As a result, what is being considered and recorded as innovation activity might differ as well.

In the absence of other more reliable indicators of innovation, the combination of measures of science, research and innovation suggested by Fagerberg, Srholec and Verspagen (2009) could be considered highly helpful for approximating innovation. Using some of those measures, Bel (2013) provides empirical evidence from China. Based on data from the European Commission, the author explains that in the last decade China has doubled the investments in R&D, the number of researchers and the number of patent applications, whereas the number of scientific publications has increased five times. As a consequence, China has the most researchers in the world and it is approaching the EU and U.S. according to the R&D intensity and the number of scientific publications respectively (Bel, 2013). Patent applications is the only measured dimension where China is not performing as well as the EU-27, U.S. and Japan. Furthermore, figures from 2011 show that China and India (taken together) have had the highest growth rate of 27.2 percent in R&D spending (Jaruzelski, Loehr and Homan, 2012),

\textsuperscript{10} The Oslo Manual was first published in 1992 by the Organization for Economic Cooperation and Development (OECD). It proposes guidelines for collecting and interpreting technological innovation data and it is based on surveys which collect data on innovation activities of countries (Organisation for Economic Co-operation and Development, 1997).
which can be seen as an incentive for more MNCs to expand their operations in emerging economies where innovation activity is blooming.

As shown on Figure 1, the developed countries including the EU as a whole are generally performing better than the BRICS in terms of their innovativeness based on 12 indicators (European Commission, 2011b). The European Commission itself (2011a, p.397) clearly asserts that “[...] the innovative capacity of the EU is concentrated in the most developed countries” which in this case are Finland, Sweden, Denmark, Germany and the United Kingdom. However, the EU’s own analyses are showing that the gap between its member states and their global competitors is widening and the EU expects to be soon surpassed by emerging economies in fields such as R&D intensity (European Commission, 2011a).

The above-presented arguments can be interpreted as an evidence of the stagnating growth of developed economies, and they confirm the initial assumption that innovation activity is blooming in emerging markets. In combination with their higher economic growth rates, this could lead to their growing prominence as the sources of innovation of tomorrow. If this trend continues in the future, it may bring emerging and developing economies closer to the level of development of the advanced economies.

Figure 2 below is an illustration of the future and shows an estimation of the GDP of certain countries that might be reached by 2050 (Siemens AG, 2012). As shown, it is China, India and U.S. that hold the leading three positions. However, the present situation seems to support Vernon’s view (1966; 1979) that innovation still comes mainly from developed economies with higher levels of economic activity. In a similar direction, Florida (2005) disagrees that the world has become flat as a result of the globalization; the author believes we are living in a spiky world with hills, peaks and valleys that emphasize the differences between countries.
More specifically, people, economic activity and innovation are still concentrated in the developed parts of the world.

Instead of GDP which could be an incomplete measure of growth, Henderson, Storeygard and Weil (2009) propose satellite data on lights at night as a proxy for measuring economic growth and development, especially for poorer countries for which GDP figures are absent. Moreover, light emissions are also mentioned by Florida (2005) as one of the ways to observe the “spiky world” phenomenon. Such a map of light emissions is included as Figure 3.
Additionally, according to the latest Global Competitiveness Report for 2012-2013 (Schwab, 2012), the list of innovation-driven economies consists of countries in the highest stage of development (the advanced economies) considered to have the most capacity to compete by developing innovations. Nevertheless, what reverse innovation is doing is challenging these preconceived notions and contributing to the modification of the current economic relief of the world.

### 3.1.3. Reverse innovation defined

Many authors (e.g. Ghoshal, 1987; Rigby and Vishwanath, 2006, Farrell, 2004) have written about different strategies for operating globally, as well as for capturing opportunities for global value creation (Gupta and Govindarajan, 2001). However, one of the most common approaches of MNCs is said to be glocalization - the adaptation of global offerings to meet local needs (Govindarajan, 2009a; Corsi, 2012), mostly because it has been quite successful in the past and still is the dominant strategy for some companies (Immelt, Govindarajan and Trimble, 2009).

Another approach is to compete only in the “global tier” of emerging markets, that is, offering products with the same characteristics and quality as the ones offered in other countries, to customers from the emerging economies willing to pay a global price (Khanna and Palepu, 2006). However, this approach would result in unlocking a small part of the total potential of emerging markets. In a contemporary business context both approaches do not always yield high growth rates and local companies who are assumed to understand local needs better, are increasingly developing innovations that are marketed globally (Govindarajan and Trimble, 2012a; Zeschky, Widenmayer and Gassmann, 2011). This is why reverse innovation is proposed as a new solution for the future of large companies (Govindarajan, 2009a). It offers a new strategic focus and a longer-term solution for some of the contemporary business problems that companies are facing. What lies in the core of this approach?

Before defining the term, let us consider the historical path of Western MNCs, also depicted on Figure 4 below. Govindarajan (2009b) identifies globalization as the first phase of the evolutionary journey of the U.S. MNCs. Companies were innovating at home and then sold their products and services (without modification) around the world. The second phase called glocalization emerged as companies realized that the previous approach renders them uncompetitive on local markets (Govindarajan, 2009b). Hence, MNCs started adapting their
offerings to the needs of local consumers which sometimes meant stripping down certain product features (ibid.). By relocating part of their R&D activities in emerging markets, MNC were aiming to gain access to local markets and local talent – highly skilled workforce but less expensive than in the home markets (Gassman and Han, 2004; Von Zedwitz, 2004 cited in Corsi, 2012). However, the R&D abroad was mostly confined to the adaptation of existing products since the crucial new product development activities were still reserved for the headquarters. The downside of this strategy is that it does not serve the BOP comprising approximately 4 billion people worldwide (Prhalad and Hart, 2002; Simanis and Hart, 2006 cited in Corsi, 2012).

The third phase called local innovation is a step toward reverse innovation as it means developing products in a local market and for that market, starting from zero but still using the global corporate resources (Govindarajan, 2009b). The fourth and last evolutionary phase is reverse innovation, meaning that companies are innovating in a certain country but for the world (ibid.). The fundamental principle behind this approach can be best summarized by Govindarajan (2012c): “We should forget that an ECG machine has to cost $10,000. We should forget that open-heart surgery has to cost $50,000. We should assume that [...] we know nothing about nothing and let us create everything from a clean slate. Then the imagination really flows. Because you can’t take a $50,000 open-heart surgery and try to reduce its cost. It’s not going to work.”

![Image](image.png)

Figure 4: The historical steps to reverse innovation (Talaga, 2010, p.1401)
The core idea of reverse innovation is not related to the price of products. It is a constraint-based and technology-led type of innovation that dictates reinventing the product development process by focusing on the customer and offering much more value at a reasonable price. As a result, the new products will have ultimately shifted the price-performance paradigm (Govindarajan, 2012c). What is important for companies to realize is that they must forget about everything they know regarding their products and start from zero without any pre-existing notions (ibid.). It can be said that for Govindarajan reverse innovation represents a new approach which was shaped by the growth of the developing world and their increasing inclusion in the global business flows.

Govindarajan (2012c) lists three steps forming the process of reverse innovation: innovating in an emerging market, taking the innovation to other emerging markets, and introducing the innovation to developed countries where the appealing price-performance ratio of the offering along with its other features could also attract wealthier customers.

Other authors have also recognized the changes occurring recently in the global innovation field. For example, Sarkar (2011) introduces the notion of reverse globalization to describe the changing global geography of innovation characterized by reverse flows of knowledge, capital and talent, spurred by the rise of the emerging markets. He emphasizes that this reverse stream in innovation nowadays originates from emerging economies, and it poses a challenge to Western MNCs. Hence, Western companies would have to cope with this change by learning how to “reverse innovate” (p.240), a skill described by the author similarly as the concept of reverse innovation. Furthermore, George et al. (2012) talk about inclusive innovation, pointing out that simply selling products to BOP customers is not sufficient; Western companies need to find a way to include people in the innovation process so that emerging economies could benefit from this inclusive growth. The authors define inclusive innovation (p.663) as “the development and implementation of new ideas aspiring to create opportunities that enhance social and economic wellbeing for disenfranchised members of society”. Such an interpretation is consistent with the goal of reverse innovation: this approach could be beneficial both to the company as it can bring new customers and profit, but also to the poorer consumers in emerging economies who can meet their needs at an affordable price point.

Corsi (2012) undoubtedly makes a great contribution in the theory on reverse innovation with his scientific approach to analyzing this new phenomenon in detail. One such valuable contribution is developing a typology of reverse innovation and identifying two additional aspects of this practice. This extends the previous one-sided market introduction view that
reverse innovation is determined by the primary market where a product was launched and the secondary market where the product was subsequently introduced (Corsi, 2012). Namely, Govindarajan and Trimble (2009) maintained that innovations first launched in an emerging market and later introduced to an advanced market can be called reverse. This explanation does not account for the origin of the idea behind the product being reversed, nor does it take into consideration other stages inherent the innovation process.

Corsi (2012) supplemented this view with two more types of reverse innovation flows, as shown on Figure 5 below: ideation-based and development-based view of reverse innovation. Therefore, reverse innovation is not only concerned with the primary and secondary market of a product, but it is also important where the idea or the concept for the product originated from and where the product was developed (ibid.). Each of the three stages of the innovation process (ideation, development and market introduction) could take place either in an emerging or in a developed market. By combining all of the alternatives, the author develops a model with 16 possible innovation flows out of which six are discarded from the beginning as being non-reverse, five are weak cases of reverse innovation and the remaining five are reverse innovations in the strong sense. In the model, “D” stands for “developing” while “A” means “advanced” with regard to the markets where each of the innovation stages took place. By using this map, we can trace a particular product/service and determine what type of innovation it is and whether we are talking about a case of reverse innovation or not. In this sense, the map is one of the most comprehensive and useful tools for analyzing the reverse character of innovations.

![Figure 5: A map of global innovation flows (Corsi, 2012, p.57)](image-url)
3.1.4. Reverse innovation actors

So far the discussion centered mainly on Western companies that innovate in emerging markets. It is important to note that there are two sets of actors when it comes to reverse innovation – other than MNCs from developed economies, innovation could come from what Khanna and Palepu (2006) call “emerging giants”. Being the incumbents on their home turf, those emerging multinational enterprises (EMNEs) hold several competitive advantages in comparison with the newcomers: insight into the needs of local customers, frugal innovation skills, the ability to operate under adverse conditions often encountered in emerging markets, experience in low-cost production and favoritism by the state (Ramamurti, 2012). Some of these advantages might actually turn into disadvantages when EMNEs attempt to enter Western markets, such as the production of low-cost products that might not appeal to affluent consumers, and for this reason EMNEs might have better chances of success in other emerging markets (ibid.).

Nevertheless, there are examples of EMNEs that have stirred up many Western industries and whose competitive threat to Western MNCs should not be underestimated. One example is Haier, which is the largest manufacturer of refrigerators in China. They started by entering the Indonesian, the Filipino, the Malaysian and the former Yugoslavian markets before finally entering Germany and the U.S. in the later stages of their global journey (Khanna and Palepu, 2006). According to the authors, this is the typical path of emerging giants – they start by entering other emerging markets which seems to be the logical first step for EMNEs. Afterwards, they enter developed markets where they usually focus on particular niches that correspond to their specific capabilities. Such experiences help EMNEs to learn and develop new skills for competing with MNCs from the developed world.

In conclusion, both Western and emerging markets multinationals could be seen as having sufficient skills and resources to engage in reverse innovation. One potential difference could be that local companies from emerging markets are more familiar with the frugal approach as it is closely related to the overall conditions in those regions of the world, while MNCs from the developed world are yet to learn to innovate with modest resources. In the end, they are all in for the same benefits – global competitiveness, expansion and future growth. Considering the growing importance of emerging markets, Western corporations should not ignore the strategic importance of those markets. Conversely, EMNEs seek to unlock growth opportunities in the West and attract new customers with their low-cost products.
3.1.5. Why reverse innovation?

The presence of foreign MNCs in emerging markets is not new – countries such as India have been major players in offering offshore R&D services for Western companies for years (Bound and Thornton, 2012). Corporations invest billions of dollars in India - mainly R&D related investments in the ICT sectors (Mitra, 2007). The author mentions software and business process outsourcing as two additional industries where India excels and thus attracts foreign MNCs with its capabilities, talent and English-speaking labor force. However, the main motive behind conducting R&D abroad has traditionally been cost arbitrage (Bound and Thornton, 2012), or in other words, taking advantage of the price difference between emerging and developed markets in terms of services, labor, etc.

The reason why reverse innovation is important for foreign corporations is that their current business models cannot be translated into real growth in emerging markets and therefore, companies’ efforts result in unlocking only a small portion of the overall potential of those markets (TEDxTalks, 2012). Govindarajan (ibid.) mentions U.S. corporations in particular and scolds them for not being very successful since they approach emerging markets with the same mindset and logic they use at home, and end up struggling in emerging markets. This can be seen as a lesson for all Western MNCs: instead of trying to find an emerging market that could fit their global strategies, companies need to think the other way around and try to find out what is the right strategy they can apply to emerging markets (ibid.). They can accomplish this by showing curiosity about the local problems of people in developing economies and creating specific solutions at a low price point. The trick in developing reverse innovations is to innovate by spending little which is contrary to what Western companies are accustomed to. Reverse innovation represents one of the biggest growth opportunities in the next decades, as innovating for the poor can help both Western MNCs and EMNEs to achieve growth (ibid.).
The potential and the importance of reverse innovation can be seen in the fact that there are over 5 billion people living in developing economies which is the majority of the world’s consumer population. A comparison between continents in terms of their population and potential customer pool can be seen on Figure 6. However, the existing products and strategies of Western MNCs cannot cater to the needs of customers from emerging markets due to the large differences in the levels of economic development.

Govindarajan (ibid.) mentions Kellogg’s as an example of how not to approach emerging markets. This American food manufacturing MNC entered the Indian market with its traditional corn flakes and “innovated” by introducing two fruit flavors which they thought would be appealing to Indian consumers. What they did not do is take into consideration the local customs of traditional consumers who prefer eating warm breakfast and therefore, the classic cereals are not a suitable product for them. Companies must innovate from scratch in order for this approach to succeed (Northeastern, 2013).

Furthermore, the key point of reverse innovation is not price reduction but delivering quality products at a low price, or in order words, creating more value for less. An example that illustrates this feature is the Indian cardiac hospital Narayana Hrudayalaya (NH) founded by the doctor of Mother Theresa and inspired by her philosophy (ibid.). This hospital provides open-heart surgery for a fraction of the price in the U.S. It uses the same equipment, achieves the same profit margins and offers world-class services with the same success rate as U.S. hospitals, but in addition, NH can offer ultra low-cost services and provides access to healthcare even to the poorest (ibid.). NH applies the simple principle of economies of scale: “mass-production” of heart surgeries significantly lowers the cost per patient while simultaneously increasing the quality, allowing the doctors to occasionally operate free of charge for patients who cannot afford the price. The quality of the service is increased as the skills of the doctors improve over time. If it is possible to offer a major surgery at a dramatically low price like the NH hospital has done, Govindarajan wonders what excuse do Western hospitals and corporations in general have not to innovate in this fashion (ibid.).
3.2. Factors influencing reverse innovation

3.2.1. Global challenges as influencing factors

Whether defined as multinational, international or transnational, the fact is that the operations of these companies span across industries and continents, and that their size, wealth and political power are staggering. For example, in 2004 General Motors earned $191.4 billion in revenues which is more than the GDP of over 148 countries (Stiglitz, 2006). Notwithstanding other considerations they might have toward the society at large such as for example, global sustainability based on the simultaneous delivery of economic, social and environmental benefits (Hart and Milstein, 2004) or corporate social responsibility (Porter and Kramer, 2006), it can be argued that they are in essence for-profit entities whose primary goal is increasing their profit (Friedman, 1970; Stiglitz, 2006). Facing continuous pressure to maintain growth (Hart and Christensen, 2002), large MNCs are concerned with strategies for entering new markets and further expansion. However, it has become increasingly difficult to choose the appropriate strategy and only few companies went beyond their traditional and standardized approaches (Khanna, Palepu and Sinha, 2005). Hence, companies need to make strategic choices on corporate and business level that can respond to classic dilemma of “where and how to compete” (Grant, 2010). What is problematic in this context is that their usual markets in developed economies are becoming more and more saturated (London and Hart, 2004).

As previously discussed, there is plenty of evidence supporting the rapid and remarkable increase in the economic activity of countries previously lagging behind, as well as the slowdown of many developed economies. Several Asian and African countries among which China with a growth rate prediction of eight percent for the next year, are on The Economist’s list (2013) of fastest growing economies this year. Conversely, mostly European countries and the Euro zone are expected to be among the fastest shrinking economies this year (ibid.). China exhibits significant progress in terms of producing highly educated workforce for the future that will contribute to its growth. Namely, there were as many undergraduate students enrolled in China in 2009 as in the EU, the U.S. and Japan combined (ibid.).

Moreover, companies originating from emerging markets have appeared on the global business scene which is not a new phenomenon. What has changed is that in emerging markets, “[…] more and more local companies innovate rather than rely on low costs to attract customers” (Roland Berger Strategy Consultants, 2012, p.1). Their activities abroad are continuously
expanding and in 2004 the foreign assets of the top 50 TNCs from developing countries reached the amount of $337 billion (United Nations, 2007). The United Nations Conference on Trade and Development (UNCTAD) further states that the majority of those top 50 TNCs originate from South, East and South-East Asia (ibid.), where India, China, South Korea, Bangladesh and other commonly pronounced emerging and developing economies are located. When the Indian MNC Mahindra & Mahindra entered the U.S. market with its small, affordable and efficient tractors that were a huge success in the home market, the current leader Deere & Company was overthrown and the market was disrupted (Govindarajan and Trimble, 2012). Initially operating below the radar, Mahindra USA built close relationships with small dealerships to promote the sales of their products. Deere & Company had not paid attention to the newcomer until it was too late and all attempts to get back in the game were futile. According to the number of units sold, Mahindra & Mahindra have become the leading truck manufacturer in the world (ibid.).

What can companies do to combat the aforementioned challenges? They can consider the opportunities of operating in emerging markets such as China, India, Brazil, and Russia, which initially playing secondary roles, have now become “the global innovation hubs” (Jiatao and Rajiv, 2009, cited in Agarwal and Brem, 2012, p.1). Moreover, there are in fact many companies that already operate in emerging markets in ways that enable them to generate high revenues and new sources of growth, to increase their efficiency and to find new sources of innovation (Prahalad and Hammond, 2002). Nonetheless, some established companies tended to avoid emerging markets, as their revenue and profit potential has been perceived as low and unattractive (Hart and Christensen, 2002).

MNCs are increasingly shifting their attention towards emerging economies, trying to establish a firm position for future competitiveness (Agarwal and Brem, 2012), due to various reasons: the large untapped pool of low-income customers at the BOP that can be served profitably (Prahalad and Hammond, 2002), the flattening of the world (Friedman, 2005) and the liberalization of some developing markets in the past several decades that has opened the doors for MNCs from developed economies (Khanna and Palepu, 2006). Aside from benefiting from this positive development trend in emerging and developing markets, some companies might find it motivating and rewarding to serve the less fortunate in third-world countries, as they are driven by the desire to engage in ethical business practices (Corsi, 2012).
Furthermore, customers are becoming more value-conscious both in the developing and in the developed world. Taking advantage of this trend could help companies develop solutions targeted at consumers worldwide. The global recession which occurred in 2000 caused a slowdown in the economic activity in the developed world (Williamson and Zeng, 2009) and later on the global financial crisis in 2008, have hampered the global growth even more and the consequences were mainly felt by the advanced economies (Matheson, 2013).

In times when financial issues are prominent, one option for companies is to focus on innovating for the value-for-money segment instead of targeting the wealthiest customers. Williamson and Zeng (2009) argue that even before the recession, the purchasing power of households in developed countries had shown signs of stagnation or decrease. A similar trend only in an opposite direction is taking place in the emerging markets. The middle class is rapidly growing as the purchasing power of consumers is increasing (Barman, 2012; Zeschky, Widenmayer and Gassmann, 2011). One Siemens executive stated that this segment of price-sensitive customers who require quality products but with minimum features is actually the gold mine they are going for (Barman, 2012). Customers from emerging and developing countries are usually value-conscious “by nature” due to the resource constraints traditionally present in their home countries (Williamson and Zeng, 2009; Zeschky, Widenmayer and Gassmann, 2011), while in Europe and in the U.S. this kind of consumer mindset has recently developed under the influence of events such as the financial crisis (Prahalad and Mashelkar, 2010).

What are the key takeaways for companies? Frugal products might appeal to both rich and poor consumers, in both emerging and advanced economies. Williamson and Zeng (2009) predict that the value-for-money segment will continue to grow in every market. Therefore, companies could see this trend as a source of new opportunities for growth and success by innovating on the basis of “affordability and sustainability rather than premium pricing and abundance” (Prahalad and Mashelkar, 2010, p.134).

Lastly, the presence of Western MNCs in emerging markets can be a strategic defense move against EMNEs which is one of the reasons why GE is engaging in reverse innovation (Immelt, Govindarajan and Trimble, 2009). The authors go as far as to claim that if GE ignores the new trend and does not develop products in emerging markets that can be sold both locally and globally, it risks being destroyed by the emerging competition from poorer countries which has
set out to follow the exact same practice. Hence, when an opportunity arises, emerging giants could cause problems for established companies on their home markets.

By developing the MAC 400 ECG machine for rural India which accounts for circa 70 percent of the populations, GE has not only managed to expand in India but they also ended up developing a product whose advantages were acknowledged by U.S. customers as well (Bandyopadhyay, 2012). With a fairly expensive and robust product, previously GE could not penetrate the lower tiers of the Indian market and thus risked being exposed to the attacks of local healthcare companies that think frugal. The MAC 400 changed their competitive position but also opened up new segments of the U.S. market that embraced the product and put it to use in a different environment. The product is truly frugal by nature: it is only a fraction of the price and size of a standard ECG: it runs on batteries to account for the electricity shortages in rural areas, it is very easy to use and overall, it gives doctors great flexibility in attending patients in remote areas (TEDxTalks, 2012). Most importantly, this ECG is nowadays sold in 225 countries (Northeastern, 2013), becoming a very successful example of reverse innovation.

The discussion above is in line with Brown and Hagel’s view (2005, p.35) that ”[w]estern companies think too narrowly about the emerging world. If they aren’t careful, they may end up as defenders, not attackers”.

3.2.2. Developed-developing countries gaps as influencing factors

According to Govindarajan and Trimble (2012b), there are five gaps identified between developing economies and rich countries that can reveal to companies the most promising areas where they should innovate. These gaps trigger the emergence of reverse innovation, since they cannot be closed by mere adaptation of current products for emerging markets. Govindarajan and Trimble (2012b) list the following five gaps: performance gap (customers in poorer countries demand less sophisticated products with an acceptable price/performance ratio), the infrastructure gap (lack of infrastructure in the developing economies influences the innovation process), the sustainability gap (environmental concerns are more intense in developing countries which might foster a faster transition to green solutions), the regulatory gap (the innovation process in emerging economies could be faster due to the lack of advanced regulatory systems that can sometimes hinder innovation), and the preferences gap (varying preferences of consumers around the globe also affect the innovation process).
3.3. Emerging markets defined

“Emerging markets” and “innovation” are two concepts that have not been often discussed in the same context but reverse innovation is changing that perception. Examples show that frugal products can come from both emerging and developing economies, and can cater to consumers from both types of markets, since their characteristics seem to be somewhat similar. Some of the differences are that developing economies are lower on the development scale compared to emerging economies; they have higher levels of poverty, weaker middle class and lower growth rates. However, since the Tata Nano is in fact a case of an innovation from an emerging market, in the following sections we will explain the concept of emerging markets and their most prominent characteristics that distinguish them from the developed economies. The specific environment and the prevailing conditions in emerging markets shape the context that can give rise to reverse innovations.

3.3.1. Emerging markets – the term

The term “emerging” in relation to a market or country lacks a clear definition that scholars, companies, organization and nations can agree on. Khanna and Palepu (2010) believe that business executives would provide very different propositions of how to distinguish emerging markets from developed economies, the recent ones including fast economic growth, the increase of competition coming from these markets and the existence of several institutional voids. Mody (2004) sees the high level of risk and the extreme volatility as main indicators of emerging markets as compared to the advanced industrialized economies. According to Khanna and Palepu (1997), a main criterion of an emerging market is “how well an economy helps buyers and sellers come together” (p.42). Cavusgil, Knight and Riesenberger (2008) further point out that even within emerging markets there are two sets of economies; the economic prosperity in terms of the infrastructure and the income is low in rural areas and higher in urban areas.

The IMF (International Monetary Fund, 2012, p.177) classifies countries in advanced economies (35 countries) and emerging markets and developing economies (151 in the latter two groups), stating that the classification is not based on strict criteria and it evolves over time. The World Bank Group (n.d.d) employs a classification in terms of gross national income (GNI) without considering the development status and classifies 90 countries in two groups
(The World Bank Group, n.d.a). On the other hand, the classification of the Financial Times Stock Exchange Index (FTSE, 2012) based on stock market indices differentiates between developed, advanced emerging, secondary emerging and frontier countries with 25 countries classified as developed and 48 in total in the other three groups.

![Figure 7: The distinction between Advanced Economies, Developing Economies, and Emerging Markets (based on Cavussgil, Knight and Riesenberger, 2008, pp.256-261)](image)

Same as the IMF, Cavusgil, Knight and Riesenberger (2008) divide the world economies into advanced, emerging and developing. Their definitions are presented in Figure 7 above. So far, we have presented only few of the different classification that can be found when explore this problem in greater depth. Moreover, the classification of certain countries such as Taiwan, Israel and South Korea (ETF Database, 2009) in one category or another is still disputable and therefore a clear-cut distinction between the world economies cannot be expected. Not only is a single widely-accepted framework absent (ibid.), but also the existing classifications are subject to the interests and varying criteria of the publishing organization.

### 3.3.2. Characteristics of emerging markets

Kotabe and Helsen (2010) argue that it is difficult to find a common ground among emerging markets, and, hence a proper definition, due to the wide range of countries classified as such. However, the authors offer seven further properties emerging markets have in common:
- Low per capita incomes but rapid pace of economic development
- High income inequalities
- High rates of emigration to the developed world
- Populations are youthful and growing
- Weak and highly invariable infrastructure
- Technology is underdeveloped
- Weak distribution channels and media infrastructure

Despite visible and measurable progress, emerging markets are characterized by different institutional voids such as the access to information, misleading regulations and inefficient judicial systems (Khanna and Palepu, 1997), although the combination and severity varies from market to market (Khanna and Palepu, 2010). In contrast to Khanna and Palepu (1997; 2010), Kotabe and Helsen (2010) criticize the purely number-based institutional framework of emerging markets and suggest to consider the fact that these countries are establishing a more formal system with transparent rules which apply equally to all market actors. Indicators of a more formal system are, for example, strong economic, political, and legal institutions with regulatory controls (e.g. anti-trust and IP rights), corporate governance and binding contracts (Kotabe and Helsen, 2010). China and India are indeed progressing by moving toward formally-run institutions but relying only on contracts is still not recommendable (Knowledge@Wharton, 2008).

The term “emerging markets” is said to have been coined during an investor conference in Thailand in 1981 because the prevailing term “third world” sounded too discouraging for potential investors (ibid.). However, the inventor of the term, Antoine van Agtmael, offers a more sociological than economical point of view by stating that the name is now less important than the fact that these countries are no longer recognized as peripheral, but rather an increasingly important part of the world (ibid.).

### 3.3.3. Emerging markets and the BOP

It is important to distinguish between emerging markets and the “bottom of the pyramid” - low income market interesting for MNCs due to the high number of potential consumers (Prahalad and Hart, 2002). Simanis and Hart (2008) point out that the proper term is “base of the pyramid”, since the former label “bottom” has rather negative connotations. Nonetheless, a unanimous definition of what the BOP actually means and consequently a clear statement
about its total potential has not been developed yet. Emerging markets usually refer to fast-growing countries, while the BOP comprises four billion people in different parts the world, or a staggering 65 percent of the world population, who earn an income of less than $2,000 per year (Prahalad and Hammond, 2002). This, however, is only one estimate of the BOP’s power. Prahalad and Hart (2002) state that those four billion people only have a yearly per capita income of $1,500, based on purchasing power parity.

There are different opinions on whether companies, especially large MNC, should serve this market segment. Prahalad and Hammond (2002) make clear that the low buying power or the inability to use modern technology are not obstacles in serving these markets. It is the authors’ opinion that the BOP could help MNCs generate strong revenues and uncover new sources of innovation. Disruptive technologies, such as fuel cells, photovoltaic or nano-technology, are awaited by people at the BOP and have the potential to be the best early market for those new technologies (Prahalad and Hart, 2002). In general, as Govindarajan (2012c) argues, people from the BOP work hard and earn little, and they are not willing to spend their money on outdated technology or stripped-down products. “Simply selling the cheapest products on hand or reusing technologies from higher-priced products will not cut costs enough and is unlikely to result in the kind of products these new customers will buy”, agree authors Sehgal, Dehoff and Panneer (2010). Hence, there is a demand for new technology and convenient, inexpensive solutions at the base.

This point of view is contested by author Karnani (2007) who suggests that MNCs have to be well aware that marketing to the poor is not as easy as it seems and proposes a change in the price-quality trade-off (a 50 percent price reduction) in order to be successful. The author agrees on the fact that poor people desire quality products but argues that they cannot afford them and thus, serving the BOP would not be profitable for companies. Govindarajan and Trimble (2012) even suggest that the price should drop to 15 percent and at this point the functionality of the product should be 50 percent. Govindarajan and Euchner (2012, p.14) clarify that “50 percent of the functionality does not mean 50 percent of the quality”, pointing out that there is a way for companies to offer both affordable and quality products to the customers at the base. Moreover, the BOP market itself can be seen as a pyramid (Dansk Industri, 2007) with different segments which suggests that a shift in the price-performance ratio could still not appeal to everyone at the BOP, and companies could focus instead on some but not all of the segments. The BOP should not be dismissed as a futile endeavor on grounds of the low purchasing power of those customers but it also cannot be served with the same
products that MNCs offer to their customers at home. This calls for new innovations and solutions specifically tailored to the conditions in emerging markets and to the characteristics of customers in those countries.

One example of the potential and power of advanced innovations at the BOP is M-pesa, a mobile-based payment system first introduced in Kenya. What makes developing countries a suitable environment where innovations can take off is their poverty and underdeveloped infrastructure (Govindarajan, 2012c). Kenya lacks a landline infrastructure and therefore, out of necessity, the country leapfrogged directly to using mobile phones and adopting one of the most advanced mobile payment systems. The British bank Barclays started offering the same service to the British consumers in 2012, five years after it was introduced in Kenya, which confirms that there is place in developed markets for innovations from developing economies (ibid.).

3.4. Distinguishing reverse innovation from other types of innovation

What is new about reverse innovation and what is already familiar? The term “reverse innovation” is undoubtedly recent, but an attempt to go deeper into this topic shows that the theoretical concept as such, has certain similarities as well as differences with other types of innovation. The challenge of contrasting different concepts is an important step in the development of theory. Most notably, reverse innovation has been often related to disruptive and frugal innovation and the concept of “jugaad”. Authors often use some of the above-mentioned terms and concepts interchangeably, consider them to be synonyms or different names for the same phenomenon. For example, Sharma and Iyer (2012) talk about resource-constrained product development (RCPD) taking place in emerging markets that lack proper infrastructure. The authors mention frugal innovation as an alternative term for RCPD. The aim of the following sections is to determine where does reverse innovation stand in relation to other types of innovation, and whether it is justified to treat these innovation practices as identical.

3.4.1. Frugal innovation

The term “frugal innovation” was coined by the CEO of Renault Carlos Ghosn in 2006 to describe the competency of Indian engineers in developing products based on frugal engineering (Sehgal, Dehoff and Panneer, 2010). The adjective “frugal” means “characterized
by or reflecting economy in the use of resources” (Merriam-Webster, Inc., n.d.) and in the business world it is mainly used to denote simpler and cheaper products developed outside of the advanced economies. Therefore, frugal innovation can be explained as a philosophy of innovating which avoids unnecessary wasting of resources.

Sehgal, Dehoff and Panneer (2010) see frugal engineering as an “overarching philosophy” (p.1) which does not mean to simply cut costs but rather offers a clean-sheet approach to product development. Frugal innovation is not even a new strategy but a whole new mindset (Radjou and Prabhu, 2013). Frugal innovations can be further defined as "good-enough, affordable products that meet the needs of resource-constrained consumers" (Zeschky, Widenmayer and Oliver, 2011 cited in Agarwal and Brem, 2012) and place the focus on functionality (Tirawi and Herstatt, 2012a). These products are mainly low-end and mid-end according to their performance characteristics; they are simple, robust and maintenance-friendly, produced in high-volumes and sold at a low price point (Roland Berger Strategy Consultants, 2012).

Developing frugal products is necessary because simply removing features from existing mature-market products to sell them cheaper will be a losing game as it cannot address the unique needs of customers in emerging markets (Sehgal, Dehoff and Panneer, 2010). Tiwari and Herstatt (2012a) add that the costs of ownership (purchase price, low cost of usage, maintenance and repair across the product life-span) have to be reduced while acceptable quality standards are met or even exceeded. A prerequisite to achieve this is to lower the use of material and financial resources throughout the whole value chain (Tiwari and Herstatt, 2012a). The opposite approach which is over-engineering products is no longer sustainable for economic and environmental reasons, state Radjou, Prabhu and Ahuja (2012), and claim that the “good enough” offerings will deliver significant value for money to cost-conscious consumers. The range of frugal products and services is diverse and includes microloans and mobile payment systems as well as cardiac surgeries, automobiles or healthcare and household products, all based on the idea of frugal innovation (Bhatti, 2012).

Similarly, Agarwal and Brem (2012) maintain that the strategy behind frugal and reverse innovation is to develop low-cost minimum-frills products that can meet the needs, preferences and buying power of low-end consumers in emerging-markets. The rationale behind this approach is that additional consumers from the MNCs’ domestic markets could be attracted by the features or usages of the frugal products.
Bound and Thornton (2012, p.14), however, emphasize that frugal innovation must not be equated with cheap, low-tech products and argue that frugal innovation has four particular attributes: it entails making better things, not only cheaper; it extends to services, not just products; it is about remodeling, not just de-featuring; it can require, or be combined with frontier science and technology which means that low-cost does not stand for low-tech. According to Ramamurti (2012), the less complex regulatory environment in different fields of emerging markets helps EMNEs to come up with innovations easier, quicker and cheaper.

Zeschky, Widenmayer and Oliver (2011) state that Western MNCs have recently started to engage in frugal innovation which has largely been done before by EMNEs, and frugal innovation is one way for Western MNCs to get a foothold in emerging markets (Agarwal and Brem, 2012). Frugal innovation does not only result in more business and cost-cutting opportunities, but can also create more social value (Radjou and Prabhou, 2013). These newly developed products will significantly reduce the use of scarce resources and are more sustainable. In this “age of austerity” as the authors call it, this environmental quality needs to be considered because customers become more cost-conscious and eco-aware. Similarly, Sharma and Iyer (2012) argue that producing a product at the lowest possible cost, besides the intended benefits like lower price, has also unintended benefits such as the frugal use of resources and thereby conservation of scarce resources. As a conclusion, frugal innovation can be interpreted as the first step of the process and a necessary precondition for delivering a reverse innovation (Nunes and Breene, 2011 cited in Agarwal and Brem, 2012).

### 3.4.2. Disruptive innovation

In one of the earliest publications on disruptive innovation, Bower and Christensen (1995) explain that a main feature of a disruptive technology is the rejection of mainstream customers because the products perform far worse along dimensions which are important to them. The authors describe these products as “low-end, dumb, shoddy, and in almost every way inferior” (Macfarquhar, 2012), they may not offer wide range of features and may be smaller or made of less expensive materials (Hang, Chen and Subramanian, 2010) or they are more convenient than products established on the dominant technology (Tellis, 2006). Disruptive technologies are defined by Christensen, Verlinden and Westerman (2002, p.961) as “simpler, more

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11 Christensen and Raynor (2003) changed the initial term “disruptive technology” to “disruptive innovation” by including not only technologies but also products and business models (Danneels, 2004; Markides, 2006), with an intention to broaden the theory’s applicability. We use both terms interchangeably as an exact distinction is not crucial for our thesis.
convenient products that initially do not perform well enough to be used in mainstream markets”. By being declined from mainstream markets and customers, products based on disruptive technology are attractive to the lower-end or niche markets which initially accept these products first (Hang, Chen and Subramanian, 2010). Later on, these products have the potential to disrupt the entire market. Since the focus of industry leaders lies on sustaining technologies and addressing more sophisticated and profitable customers, they tend to ignore innovations from the low-end (Christensen, Craig and Hart, 2001) which can facilitate the disruption. Bower and Christensen (1995) add that disruptive technologies look financially unattractive to market leaders, and due to the low potential revenues and the difficulty in predicting the market size, managers usually refuse to develop these products further.

Danneels (2004) argues that these widely accepted characteristics of disruptive innovation are typical but not necessary for disruptive technologies and doubts whether mainstream customers do not initially value disruptive technologies. He also questions whether disruptive technology always matures in the low-end segments and whether a disruptive technology always has initially lower performance. One of the reasons why some established Western MNCs might miss new opportunities in emerging markets could be their inability to move down the market again and develop another disruptive innovation, once they have been successful and served the high end of markets (Christensen, Craig and Hart, 2001).

Developing economies are seen as significant in terms of their potential for disruptive innovations. More modest versions of high-end products on markets which were left out or were poorly served by existing products, offer a greater disruptive potential and hence growth than those that begin and end in developed markets (Hart and Christensen, 2002). In this context, resource constraints such as low purchasing power, small living spaces, water and power shortages, and increasing fuel costs create opportunities for successful disruptive innovations in emerging markets (Hang, Chen and Subramanian, 2010) that could also convert the non-consumers into first-time customers.

However, MNCs that want to address emerging markets face a challenge: experience from their home markets does not prepare them to meet the aggressive price/performance ratios prevailing in emerging markets (ibid.). The opportunity to reach customers at the BOP previously shut out from the market due to too expensive or complicated products make established companies alter their business models (Johnson, Christensen and Kagerman, 2008). In order to be successful in pursuing this disruptive strategy, companies should pay attention to
the full user context and to develop local capabilities to ensure an acceptable price/performance ratio (Hang, Chen and Subramanian, 2010).

As an illustration, Christensen, Craig and Hart (2001, p.93) assert that “[T]he future of potentially disruptive technologies such as fuel cells and microturbines will also be forged at the bottom of the pyramid” and with billions of potential customers, the investments in these opportunities are worth it. The authors claim rather drastically that the key to economic development in poor countries is the disruption process. Sustainable energy pioneers who focus on the BOP and succeed in including the non-consumers could incite “one of the biggest bonanzas in the history of commerce” (Hart and Christensen, 2002, p.56).

The discussion above points out that disruptive innovation is indeed a relevant concept for the developing and emerging economies, which can easily be the hosts of products/services based on disruptive technologies. With regard to the connection between disruptive and reverse innovation, Ruan, Hang and Subramanian (2012, p.26) call reverse innovation an “extended disruption model” implying that it could be treated as a type of disruptive innovation. Corsi and Di Minin (2011, p.17) also consider reverse innovation as being “[…] a form of disruptive innovation that originates not from the same geographical market that incumbent companies dominate, but rather from the markets of emerging economies, where a technology/product has been commercialized to fit the characteristics of those markets, particularly serving the vast bottom of the pyramid”. Govindarajan and Trimble (2009) admit that there is a certain overlap between reverse innovation and disruptive innovation, but they further explain that not every case of reverse innovation is also a case of disruptive innovation. Reverse innovation does not spread in lower market segments because the products were not good enough for the more sophisticated market segments, but it is from the very beginning intended to satisfy the needs and requirements of the lower market segments. Those products can later on find its place in developed markets as well. In an attempt to visualize the mutual relationship of these concepts, it can be said that reverse innovation is a broader phenomenon that entail a potential for disruption. Hence, reverse could but does not have to always mean disruptive. It is the same vice versa; disruptive could but does not necessarily means reverse.

3.4.3. Jugaad innovation

Understanding jugaad is made rather difficult due to the fact that one can encounter various sharply differing opinions among authors. According to Singh, Gupta and Mondal (2012,
p.89), jugaad refers to “innovations in products and/or processes carried out by people to solve their immediate or long-term problems […] under a resource constrained environment and often under hostile surroundings”. This does not seem to correspond to the idea of MNCs developing products in emerging markets for commercial purposes, but rather, it points to people’s ability to improvise and fix everyday problems. On the other hand, Saraf (2009) states that jugaad is a colloquial term for constraint-based innovation thinking that can be equated with the concept of frugal engineering, and it is explained as solving customers’ problems on the basis of creativity and ingenuity rather than on science and technology. In this case, jugaad is seen as a business practice and a synonym for frugal innovation. Moreover, jugaad is said to entail a compromise on quality (Prahalad and Mashelkar, 2010) as it means coping and getting by with what is available. The origin of the term “jugaad” is related to very old and nearly falling apart motor vehicles such as motorcycles and cars often used in India to transport a large number of passengers (Singh, Gupta and Mondal, 2012). Therefore, in a business context, there is a danger of jugaad receiving a negative connotation as something related to cheap and low-quality products.

Some authors see jugaad as a new management practice which is the result of the overall poverty, the resource-constraint environment and the substandard infrastructure in India (Birtchnell, 2011). Living in this kind of conditions, people from emerging economies have developed a sense of creativity and innovativeness that can help solve their immediate problems. Hence, jugaad could perhaps be best explained as being a part of the emerging economies’ culture and mindset. Even though it is a Hindi word and relates to India in particular, “[T]he entrepreneurial spirit of jugaad is not limited to India.” (Radjou, Prabhu and Ahuja, 2012, p.5). It is also common and often practiced in other emerging economies with similar characteristics such as Brazil, China and Kenya, which all use a different term in their own languages to refer to the concept of jugaad (Radjou, Prabhu and Ahuja, 2012).

### 3.5. Benefits and drawbacks of reverse innovation

For Western MNCs, reverse innovation is about “creating far from home and winning everywhere” (Govindarajan, 2012b, n.a.), and adopting this approach can have global implications to the entire business of MNCs. As mentioned previously, the decision to innovate in developing economies could not only open up new sources of growth, but it is also seen as a defense strategy for protecting the competitive advantage at home (Govindarajan, 2012b).
The reason why only few companies have begun to work on reverse innovation can be related to the challenges inherent in this approach. MNCs attempting to do business in emerging markets with their current business models find it difficult to sell at optimal price points due to their current organizational processes and cost structures (Khanna and Palepu, 2006). The lack of sophisticated market research or the inexistence of other companies in the supply chain that MNCs can rely on, further impairs their ability to compete successfully (ibid.). They do, however, encounter the same institutional problems that local companies face, but the newcomers are less prepared and lack the skills and experience in circumventing those problems (ibid.). Furthermore, MNCs seeking to enter emerging markets need to establish the right mix and balance of local sensitivity and global knowledge, but they sometimes lack the cultural understanding to do so (Prahalad and Lieberthal, 1998).

On the other hand, EMNEs have the home field advantage over Western MNCs due to their knowledge of the local context and the needs of local customers (Khanna and Palepu, 2006), which allows them to do something MNCs are reluctant to do, and that is to adapt their strategies to the local market. As Govindarajan and Trimble (2012a) point out, reverse innovation is often business model innovation as well. There lies part of the answer why reverse innovation has not been adopted by more MNCs yet. Companies will need to replace old organizational structures with new ones, change their established methods of product development, and in general change the organizational mindset and dominant logic so that internal resistance can be overcome (Govindarajan, 2012a).

Returning to the previous discussion, Machiavelli’s famous quote on change (n.d. cited in Kotter and Schlesinger, 1979, p.106) "[I]t must be considered that there is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things." This statement sums up the difficulties of introducing change within organizations and questioning the established ways of doing things, the organizational culture and philosophy. Challenging the dominant logic of companies, especially large and old MNCs whose activities span across continents and industries, is not an easy task. Nonetheless, this is one of the necessary preconditions for reverse innovation to be a successful endeavor because approaching emerging markets can be challenging when top managers are still in favor of the traditional practices. Executives can be biased against poor countries (Immelt, Govindarajan and Trimble, 2009) and so, granting more autonomy to the company units in emerging markets can be difficult.
Some of the dilemmas that multinationals face when considering the pursuit of reverse innovation are the risk of cannibalization and brand name dilution if the company were to launch less expensive products in their product line (ibid.). Other than the potentially higher costs than benefits of such an effort, those products can also be seen by companies as a threat to their overall margins and to the efficiency of their production (ibid.). The varying preferences and requirements of consumers in different geographic regions can be seen as an additional obstacle when considering the introduction of frugal products in developed markets.

3.6. Toward the development of a reverse innovation framework

Having presented different innovation theories related to reverse innovation, drawing the line between the concepts is a necessary step toward a better understanding of the reverse innovation phenomenon. In this section, we aim to contribute to clarifying the conflicting views in theory by developing a more comprehensive explanation of reverse innovation that will both aggregate all related concepts and distinguish among them.

It is our opinion that frugal and reverse innovation are two approaches to innovation that are inspired by the conditions in the less-developed parts of the world. From the point of view of companies, only these two can be considered as business approaches. The discerning
characteristic between frugal and reverse innovation is based on the market introduction step – if the innovation remained within its primary market in an emerging economy, it can be labeled as frugal innovation. If there is evidence that the innovation afterwards transitioned to a secondary market in a developed economy, it can be said that the last step of the cycle has been completed and the innovation can be called reverse. In this sense, frugal innovation can be regarded either as a sub-process and the first step of reverse innovation, or alternatively, as a stand-alone approach that does not necessarily need to end with a reversal. At this point, we concur with Corsi (2012) who emphasizes that for an innovation to be considered reverse, there has to be a successful transition from an emerging to an advanced market. The dotted arrows on Figure 8 denote the optional step of introducing the product in another emerging/developing economy before the product is brought to an advanced market.

“Frugal” refers mainly to the nature of the products and services in the focus of this new approach – frugal products are commonly creative solutions for the problems of customers in emerging markets who cannot afford top-notch innovations. Frugal products can deliver value without wasteful consumption of resources, and are therefore a kind of cost innovation. An extended model of reverse innovation (Figure 9) would include additional closely related elements. With regard to jugaad and other comparable indigenous philosophies, this is not a business approach per se; it is a way of thinking enrooted in the culture of emerging economies that results in individuals creating improvised solutions with the available, usually quite scarce, resources. It should be considered an influencing factor for creating frugal products and it can teach companies how to deliver more value with less resources.

In our opinion, jugaad is a mindset born out of necessity and refers to the make-do solutions that people invent in

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12 The positioning of frugal and reverse innovation on the map (marked with red “R” and “F” boxes) in certain emerging and developed markets is just an example of the path that reverse innovation could follow. Other emerging and developed markets are not excluded.
order to solve everyday problems. Companies, on the other hand, cannot compete based on quick-fix or make-do products. Instead, if businesses implement the jugaad philosophy and mindset, they can better understand what kind of solutions the customers might need, but also how the company itself can innovate without high investments in R&D. The resulting solutions can be translated by the company into frugal products.

We tend to agree with Govindarajan and Trimble (2012a) who, contrary to Corsi (2012), hold the view that reverse innovation is not always a case of disruptive innovation. Moreover, we contend that the disruptive potential frugal products might have is more relevant to their secondary (developed) market, as the price-performance ratio of these new products could have a bigger impact on Western consumers. We contend that the disruptive character of the innovation is not the decisive factor in determining whether a particular product/service is a case of reverse innovation. In addition, we do not share Govindarajan’s view (2012c) that reverse innovation is neither jugaad nor frugal innovation because of the differing technology used. We see reverse innovation as an overarching philosophy that entails both aspects. Lastly, it is our opinion that reverse innovations can be best identified by the location of development of the products and by the market introduction (primary and secondary markets). The ideation phase of the innovation process might prove to be a problematic element in the analysis, as it is often difficult to discern where exactly the idea for a product/service came from.

Reverse innovation is a commercial approach of developing frugal products or services in emerging/developing markets and subsequently introducing those products (with or without modifications) in advanced markets. The development of these products is influenced by the jugaad philosophy and they could have the potential to disrupt developed markets.

4. Empirical data

This chapter presents the story of the Tata Nano – the world’s cheapest car and one of the most recent innovation wonders. “Launched in 2009, the car was hailed as a path-breaking initiative, creating the Micro compact segment in the Indian Passenger Car industry” (Tata Motors, 2012a, p.21). The empirics are based on secondary data combined from multitude of sources in order to present as detailed and as accurate account of the events that led to the development of this automobile. The information presented here will be used for the subsequent analysis chapter to critically reflect on the events and utilize the data to test the theory. We begin with a
description of India to illustrate the context of our case. We continue with a description of the company behind this innovation – Tata Motors, and move on to explain the complete product development process from idea to market introduction.

4.1. Case study context

India is a country in Southern Asia and according to the latest estimates for 2012 it is the second most populous country in the world with approximately 1.2 billion people (CIA, n.d.). The cities with the number of inhabitants are the capital of New Delhi, then Mumbai, Kalkota, Chennai and Bangalore. In 1947, India was granted independence from the United Kingdom which was the dominant power controlling the region (ibid.). Historically, the Indian society has been struggling with problems such as poverty, corruption and overpopulation, but this has not stopped the country from becoming one of the leading emerging markets in the world (ibid.). In fact, the poverty rate has been declining and a number of measures have been taken in order to improve the living conditions and the well-being of the poorest citizens, in terms of improving access to education and healthcare, and investing in the infrastructure and urbanization (The World Bank Group, n.d.c). Nonetheless, around 30 percent of India’s population still lives below the poverty line (CIA, n.d.).

Khanna (2009) states that, in India, the civil society is much more prominent and has more influence on the way the country functions, often compensating for the shortcomings of the state. Corporations are said to be better off going along with the civil society (ibid.). Since the 1990s, India’s economy has been undergoing a process of liberalization which accounted for its outstanding growth rate, achieving a yearly average of around 7 percent since 1997 (The World Bank Group, n.d.b). The country has been praised for the wide range of structural reforms undertaken in the past two decades that have brought India closer to being a market-based economy and spurred its strong growth rates (Organisation for Economic Co-operation and Development, 2012).

The economy of India encompasses both traditional and modern industries with a focus on agriculture and services. According to its purchasing parity, it is the fourth largest economy in the world (The World Bank Group, n.d.b). The unemployment rate for 2012 has been estimated at around 10 percent, while the GDP per capita is $3,900 (CIA, n.d.). The World Bank classifies India as lower middle income country (The World Bank Group, n.d.b) and according to the World Economic Forum (Schwab, 2012), it is still considered a factor-driven
economy or a country in the first stage of its development. Gupta (2011) explains that the Indian consumers are traditionally less materialistic compared to consumers from developed countries. The author’s research reveals that consumers are being increasingly influenced by Western brands brought about by the globalization wave, but it is only the younger consumers who show higher levels of materialism.

Despite the progress, the country’s regulatory and business environment are estimated as unfavorable and reforms are called for in additional areas such as transparency, corruption, access to information, etc. (Organisation for Economic Co-operation and Development, 2012). Moreover, the inequality between rural and urban areas has grown in the past years, with 33.8 percent of the rural population and 20.9 percent of the urban population living below the official poverty line (ibid.). Inequality between the top and bottom wage-earners has reportedly doubled in the last 20 years, and according to the OECD, around 42 percent of India’s population lives with less than $1.42 a day which makes India the country with the highest number of poor people in the world (BBC, 2011).

Although the level of motorized traffic in India has risen, this growth has been unsupported by improvements in road infrastructure and due to the low average income most Indians still rely on walking, cycling or public transport (Organisation for Economic Co-operation and Development, 2012). In fact, the average income in India is “a quarter of the level at which car ownership usually takes off” (ibid., p.16) and the car ownership rate of less than 2 per 100 people is low compared to Europe.

The discussion above portrays India as one of the largest and poorest countries in the world. This results in Indian consumers being more cost cautious than quality cautious (Agarwal and Brem, 2013). Despite India’s drawbacks, Indians have been praised for their jugaad mindset.

4.2. Company profile

4.2.1. Tata group

The Tata group was founded in 1868 by Jamsetji Tata with a guiding philosophy to always return wealth to the society they serve, or to put it differently: “giving back to society what came from the society” (Tata group, 2013). Throughout the history of the group several market tiers of India’s economic pyramid were served, including those at the base with commodities such as salt, textiles and oil which is also one of the main reasons for Tata’s awareness of the unique needs and the conditions at the BOP (Ray and Ray, 2011). In 1991, Ratan Tata became
CEO of the Tata group with an aim to bring the different companies closer together, and thereby create a common brand (Pandit, 2005). Mr. Tata retired in December 2012, and was succeeded by Cyrus P. Mistry as chairman of the board (Tata group, 2012). Today, Tata group has 450,000 employees worldwide and comprises over 100 companies operating in seven business sectors. Every company or enterprise works independently and the whole group which operates on six continents in over 80 countries had total revenue in 2011-2012 of $100.09 billion (Tata group, n.d.b).

4.2.2. Tata Motors

Established in 1945 in India, the company was operating under the name of TELCO (Tata engineering and Locomotive Co. Ltd), and produced only locomotives and other engineering products until they established a cooperation with the German Daimler Benz, who was at the time looking for a partner for manufacturing commercial vehicles in India (Tata Motors, 2012b). Freiberg, Freiberg and Dunston (2010) argue that this cooperation enabled the company to imitate Mercedes’ standards and practices, as well as to acquire knowledge about automotive engineering in order to become an innovative car company. Tata Motors now employs over 55,000 people worldwide who are guided by the mission "to be passionate in anticipating and providing the best vehicles and experiences that excite our customers globally" (Tata Motors, n.d.a). Tata Motors is an international automobile company with subsidiaries and associate companies in the UK, South Korea, Thailand, Spain and South Africa (Tata Motors, 2012a, p.1). The product range consists of passenger cars, commercial vehicles, and defense and homeland security vehicles (Tata Motors, n.d.b). In 1998, Tata Motors introduced the first fully indigenous passenger car – Tata Indica (Tata Motors, 2012b) and therefore the company can be regarded as a rather young passenger car manufacturer. Today Tata Motors is the No.1 commercial vehicles manufacturer in India, the third largest vehicle manufacturer in India, the largest bus manufacturer in the world (by volume) and the fourth largest manufacturer of trucks (by volume) in the world (Tata Motors, 2012a, p.13). Tata Motors is also the owner of the automobile brands Jaguar and Land Rover13.

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13 In 2008, Tata Motors acquired Jaguar and Land Rover from Ford and expanded their portfolio in the luxury car segment (BBC News, 2008). Despite some challenges regarding the funding after the acquisition, Jaguar and Land Rover were seen as a driving force for the near future of Tata Motors (Bajaj, 2012), as the sales growth rates for the fiscal year 2011-2012 were 37 percent and 29 percent in value and volume respectively (Tata Motors, 2012). These figures looked worse at the end of 2012, with a decline in the operating profit for Jaguar and Land Rover by
Despite the success in recent years, Tata Motors is struggling as a result of their worsening financial figures. In addition to the overall decline of the Indian automotive market due to slow economic growth as the main reason for the company’s problems, analysts also assert that Tata Motors have made some poor strategic decisions when it comes to the Indian market (Philip, 2013). The uninspiring, ageing portfolio and hence, the unappealing brand, as well as the rising competition from domestic and foreign rivals on the Indian market, were the reasons for the decline of Tata’s market share (Mukherjee, 2012). Furthermore, Tata Motors did not cover market segments which are booming and is struggling to launch new products and new features (The Hindu Business Line, 2013). In order to cope with the challenges, the company hired former India head of General Motors, Karl Slym, as the new managing director (Mukherjee, 2012). Slym announced that he would rethink the strategy for Tata Motor’s passenger car segment including drastic changes and a long-term revision of the portfolio (The Hindu Business Line, 2013).

4.3. The Tata Nano

4.3.1. The idea

The idea of producing a low-cost and affordable car for the masses goes back to an often told anecdote of the back-then CEO of Tata Motors - Ratan Tata, when he was in his car in Bangalore during the monsoon season in 2002. He saw an entire family with three or four members on a scooter which is a common site in India, when they slipped and fell. Luckily nothing seriously happened and according to Mr. Tata, this situation started “the whole thing” in his mind (Freiberg, Freiberg and Dunston, 2010). “It’s a dangerous form of transportation”, said Mr. Tata and added that “[I]f we can make something available on four wheels – all-weather and safe – then I think we will have done something for that mass of young Indians” (Pandit, 2005, p.64).

With his idea of a safe means of transportation and the picture of the family on a scooter in mind, in the beginning of 2003 Mr. Tata asked executives of Tata Motors to put together a team of young engineers to explore the idea of a small car for the masses, and in March the same year he first spoke publicly about the car which will later become known as the Nano (Freiberg, Freiberg and Dunston, 2010). Moreover, the price of 1-lakh for the Nano was 25 percent on the domestic market which is even more disastrous since Jaguar and Land Rover contributed with 74 percent of Tata Motor’s operating income (Philip, 2013).
sensational news that provoked strong reactions in the automotive industry (NGC Network International, 2012). In a conversation with a correspondent from the Financial Times, Mr. Tata had mentioned that he could imagine that a car could cost about 1-lakh. The next morning, the correspondent published a story stating that Tata Motors was about to manufacture a 1-lakh car, misinterpreting Mr. Tata’s thoughts about the cost of a car in general (Chacko, Noronha and Agrawal, 2010). After that headline, he had two choices: “[O]ne was to refute this statement or to take it down as a target” (NGC Network International, 2012). Thinking twice about this, he decided to take the 1-lakh as a target price which shocked Tata Motors officials because it seemed to be impossible (Chacko, Noronha and Agrawal, 2010). The managing director at the time, Ravi Kant, emphasized that the Nano was not a charitable project but a profit-making idea that will also make a difference (Freiberg, Freiberg and Dunston, 2010). Hence, Tata’s dream of building the Nano was also intended to bring profit for the company.

In addition, the name Nano comes from the Greek word for dwarf but it also means small in Gujarati which is “the language of the founders of the Tata Group” (Patton, 2010). Hence, the name is a reminder for everyone about the origin of the Nano.

4.3.2. The Nano team

The composition of the Nano design and development team was based on certain ideas and directions from Mr. Tata. In early 2003, a small group of engineers was called in to a meeting in Tata Motors’ Engineering Research Centre in Pune in order to brainstorm ideas for a small car and present the findings to Mr. Tata the next day (ibid.). Although they were not given clear directions, the engineers had the headlines of the 1-lakh car in mind when they gathered (ibid.). As one of the most experienced industrial designers at Tata puts it, "[I]t began as an advance engineering project. The idea was to try and create a very low cost transportation with four wheels — it was not even defined as a car" (Agrawal and Wadia, 2008).

After the first presentation, in April 2003 a small team was composed of five people from different engineering disciplines who were reporting to their departmental heads (Chacko, Noronha and Agrawal, 2010). Tata Motors had a tradition to get together the best young talent in the company and let these 10-15 engineers at the age of 25-35 talk without any agenda about the ideas they have. This tradition which began in the early 2000s had a significant influence on the composition of the team working on the Nano, as Mr. Tata explains: “I think if the older
segments of our company had run this project it probably would never have happened. The Nano project team was made up of engineers whose average must have been twenty-six. They were willing to believe anything was possible” (Freiberg, Freiberg and Dunston, 2010, p.43).

Moreover, Tata Motors expected that a team of younger engineers would not be as influenced and constrained in their thinking by the profit formulas as the more experienced employees (Johnson, Christensen and Kagerman, 2008). By the beginning of 2004, the project team increased to 12 members, but the progress was too slow for Mr. Tata. Despite of the vast scope and the challenges of the task, he became impatient and after a disappointing test drive of a prototype of the Nano, he decided to take action (Chacko, Noronha and Agrawal, 2010). He asked Ravi Kant to take over as managing director of Tata Motors and by July 2005 they assigned the designer Girish Wagh to lead the Nano project team due to his leadership skills demonstrated on previous projects (Freiberg, Freiberg and Dunston, 2010). Wagh stated that his task was “to get a fix on the styling, packaging, engine and transmission” (Gupta, 2008). At its peak, the Nano project team had more than 500 people who believed that they do more than just a job when working for the project (Chacko, Noronha and Agrawal, 2010).

4.3.3. The design

Chacko, Noronha and Agrawal (2010) emphasize the creativity the project team showed in terms of combining existing patented components and technologies, and redesigning them to
be suitable for a small car. Creating such an “aha” solution with the least amount of effort or resources was a mandate for the Nano team on its way to come up with a simple but elegant solutions that helped to keep weight and costs down (Freiberg, Freiberg and Dunston, 2010).

Chacko, Noronha and Agrawal (2010) as well as Freiberg, Freiberg and Dunston (2010) give several examples of how the Nano could achieve a fair amount of frugality and hence, save costs in the design and production. Figure 10 above shows some of the most important design features discussed next:

- **Engine**: An adequate engine for the Indian road conditions with a maximum speed of 105 kmph, placed in the rear of the car in order to free up more space.
- **Body and frame**: A lightweight sheet-metal unibody construction, which is, according to the Tata Motors engineers, stronger than that of a conventional car because of the balanced maximum/minimum thickness of steel where needed.
- **Wheels**: Being smaller in diameter, tubeless, and having just three lug nuts instead of the traditional four, saves money on wheels and tires.
- **Mirrors and wiper**: A rear-view mirror on the passenger side is only optional and only one single-piece wiper should further save costs.
- **Dashboard and interior**: The bare-bones instrumentation panel is placed in the center of the dashboard in order to be able to reduce work and costs if a left-hand drive model is needed; the seats are simple and barely adjustable; the gear lever and cup holders are
designed to minimize assembling time; the rubber floor is easy cleanable and helps dampen sound; places people touch are finished with plastic trim while others are only exposed painted metal; electrical fittings and electronic components are bare minimum, the basic model has no climate control and electric window lifts.

4.3.4. The competiors

Previous marketing efforts of Tata Motors revealed a great desire to get off from two- and three-wheelers, since the ownership of a four-wheel vehicle is considered a huge event in the very status-conscious India (Bennett, 2008). Besides that, Mr. Tata gave the development team a clear aim: “The most expensive two-wheelers cost 1-lakh rupees or more and that’s where this car has to compete” (Freiberg, Freiberg and Dunston, 2010, p. 29). Bickerstaffe and Honeywill (2008) also argue that the Nano was designed purely as a replacement for the motorcycles in order to transport the average Indian family. To emphasize this, they state that “comparisons with other cars are pretty irrelevant” (p.17), because the Nano does not compete head-on with automobile manufacturers. Furthermore, Birchnell (2011) agrees that the Nano is aimed at replacing the demand for two-wheelers at a much lower price point. Even Rajiv Bajaj, the managing director of Bajaj Auto, the largest producer of the three-wheel auto rickshaws on the Indian market, saw the Nano as a threat to Bajaj’s business (Chacko, Noronha and Agrawal, 2010).

Despite the announcement that the Nano should replace the two-wheelers and auto rickshaws, some car manufacturers also saw the Nano as a threat to their business. One of the biggest critics was Ozamu Suzuki, chairman of the Japanese Suzuki Motor Corporation, whose Maruti-800\(^{14}\) was market leader in the mini car segment. Feeling threatened by a new competitor who plans to offer a car for half of the price of a Maruti-800, Mr. Suzuki claimed that it was not possible to produce a less expensive car than their model and that such a car could never be made safe enough, or good enough to survive the competition (ibid.). Moreover, developing the Nano for people who either cannot afford a car at all or want to have a secure all-weather means of transportation for the family aims at including the current non-consumers.

After the launch of the Nano, several car manufacturers announced that they are working on cars for the micro and mini segment as well. Hyundai, who were already concerned about the

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\(^{14}\) The 1983 Maruti-800 introduced in a joint venture with the Indian government was the first affordable car for the Indian middle class. It quickly gained high market share which lasts until today (Freiberg, Freiberg and Dunston, 2010).
impact on their sales after the unveiling of the Nano (ibid.), introduced the Eon in autumn 2011 in order to compete on this segment. Bajaj unveiled a four-wheel vehicle in January 2012 after five years of planning, and strongly emphasized that it is not a car but rather a four-wheel auto rickshaw. Recently, the state of Jammu and Kashmir has announced the use of Nanos as taxis using the same tariffs charged by auto rickshaws (Nithyanandh, 2013). Although Rajiv Bajaj claimed not to be competing in the same segment as the Nano, he showed signs of feeling threatened by the potential competition by attacking it: "I am personally not sure what the Nano is. If it is the cheapest car in the world or God's gift to twowheeler (customers)" (India Today, 2012). Freiberg, Freiberg and Dunston (2010, p.92) quote an editor of India’s popular car and motorcycle publication “Overdrive”, who calls the Nano a “game-changer” which will shape the automotive landscape of India or maybe even the world.

4.3.5. The suppliers and vendors

Authors emphasize the importance of suppliers in the development process of the Nano without which the low-cost car would not have been created (e.g. Wells, 2010; Ray and Ray, 2011; Bickerstaffe and Honeywill, 2008; Freiberg, Freiberg and Dunston, 2010; Sehgal, Dehoff and Panneer, 2010; Chacko, Noronha and Agrawal, 2010). Most contemporary cars such as the Nano, depend upon the input of key suppliers (Wells, 2010). The noteworthy aspect in the cooperation between the suppliers and the Nano development team is the fact that it was necessary for the leading suppliers to embrace Tata’s frugal engineering philosophy (Connell, 2009 cited in Wells, 2010). The Nano project team could get the suppliers excited as the project processed (Chacko, Noronha and Agrawal, 2010). In fact, “innovation in design and the prospects of long-term advantages were what pulled suppliers into the project, not flea-market bargaining or arm-twisting on cost” (ibid, p.63).

Chacko, Noronha and Agrawal (2010) mention problems with suppliers and vendors at the beginning of the project. The project team had difficulties to convince the suppliers that the Nano was for real and without the ability to make predictions about the success of the Nano, sharing of the risks was crucial. The involved suppliers could enjoy long-term advantages in terms of gaining experience on low-cost systems to improve their competitiveness in other markets (Bickerstaffe and Honeywill, 2008). One of the leading executives at the German company Bosch states that the cooperation with the Nano-project team is a profitable business for Bosch: “For a BMW M3, the engine’s the most important part of the car. For a one-lakh car, the main thing is that it has a roof, four doors and four seats. The margins are smaller as a
result, but the volume per variant is higher” (Bickerstaff and Honeywill, 2008, p.18). In addition to Bosch, several other European suppliers were involved in the project.

Some of the key suppliers like Behr, Continental, Mahle, Valeo and ZF, have one thing in common - owning a production capacity in India (Mayer and Snyder, 2008). Sourcing the parts for the Nano locally was an important requirement for being able to make a cheap car, or as one board member of the German supplier Behr points out: “It would be impossible to deliver a low-cost product out of Western Europe to a different place in the world” (Mayer and Snyder, 2008). The Nano team tried to limit the number of suppliers to about 100 and to follow a single-supplier strategy in order to save costs, due to the fact that a guaranteed maximum business volume will help the suppliers to offer cheaper prices and get a greater benefit as exclusive vendors (Chacko, Noronha and Agrawal, 2010). A supplier strategy with only 100 vendors, 60 percent less than normal, as well as a total of 85 percent outsourced parts had the aim to reduce transaction costs and achieve better economies of scale (Johnson, Christensen and Kagerman, 2008). Moreover, “the idea was to forge the strongest possible partnership with vendors and to cultivate a truer sense of sharing, of business risk as much as with long-term profitability, and of stability in relationships”, explains BB Parekh, Tata Motors’ Chief of Strategic Sourcing (Chacko, Noronha and Agrawal, 2010, p.62).

<table>
<thead>
<tr>
<th>Company</th>
<th>Product</th>
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<tbody>
<tr>
<td>Autoliv</td>
<td>Seat belts</td>
</tr>
<tr>
<td>Behr</td>
<td>HVAC (= heating, ventilation, and air conditioning)</td>
</tr>
<tr>
<td>Bosch</td>
<td>Starter motor, engine-control module, injectors, sensors</td>
</tr>
<tr>
<td>Continental</td>
<td>Transmission speed sensors, fuel-level sensor, fuel pump</td>
</tr>
<tr>
<td>Mahle</td>
<td>Fuel filter, air cleaner</td>
</tr>
<tr>
<td>Saint-Gobain</td>
<td>Glazings</td>
</tr>
<tr>
<td>TT Electronics</td>
<td>Speed sensors</td>
</tr>
<tr>
<td>Valeo</td>
<td>Clutches</td>
</tr>
<tr>
<td>Vibracoustic</td>
<td>Engine mounts</td>
</tr>
<tr>
<td>ZF</td>
<td>Tie rods</td>
</tr>
</tbody>
</table>

Figure 12: List of TATA helpers (Mayer and Snyder, 2008)

Like Bosch, the European vendors do not expect a high margin, neither do they expect losses, but they engage in this cooperation for other reasons: “The Tata Nano is a start for Continental. We do not earn much money with it, but we would never do a project just to make an
investment for the future,” explains one Continental executive and adds that owners of low-cost cars usually want more comfort and sophistication in the future from their second cars, which means that more expensive components will be needed (Mayer and Snyder, 2008). Others, like Gunnar Dahlen, the Asia Pacific president of the Swedish Autoliv, expect the Tata Nano to be a high volume car on a growing market and thus, a source of growth of Autoliv’s sales (Mayer and Snyder, 2008). Being involved in the Tata Nano project makes the suppliers interesting for other car manufacturers and their low-cost cars as well. One member of the managing board of Bosch confirms that the project is giving Bosch a good entry point for this segment (Sen Gupta and Chaturvedi, 2009). Another Nano supplier mentions that other MNCs are interested in the developed technology for small cars because of their plans to introduce low-cost cars in the following years themselves (Sen Gupta and Chaturvedi, 2009). Freiberg, Freiberg and Dunston (2010) also argue that suppliers might not get an immediate financial benefit from the cooperation. Instead, they foresee the game change in the automotive industry as a potential benefit for the suppliers, as they will have gained knowledge and skills to increase the cost performance or reduce the weight of crucial parts of automobiles.

4.3.6. The target customers

Chacko, Noronha and Agrawal (2010) assert that Mr. Tata is known to have “a sharp sense of what customers want, an attribute accentuated, in this instance, by his understanding and knowledge of all things motoring” (p.9). This statement points out to Mr. Tata having the ability to estimate the target market with fair accuracy; an ability expected to be utilized for the Nano’s marketing strategy. As previously the Volkswagen’s best seller “Beetle” and Ford’s revolutionizing Model T, the Nano aims at India’s large and fast growing middle class with its rising salaries and aspirations (Freiberg, Freiberg and Dunston, 2010). Govindarajan and Trimble (2012) further stress that the Nano will make car ownership possible for 65 percent more Indians of the middle class who are eager for a safer alternative to motorbikes and who are the initial target of the Nano. Research shows that it was the low price that gave previously excluded consumers the opportunity to buy a car: “The new price point reduces the cost of ownership of an entry-level car in India by 30 percent” (The Hindu Business Line, 2009). Srivastava (2009) describes rather poetically that many Indians which are neither poor nor rich will have the chance to avoid motorcycle rides with “balancing between life and death on the way to a picnic, dodging rich people’s cars and poor people’s cows.” Expressed in hard facts, this means that additional 14 million families, including a part of the 58 million two-wheelers
can afford a Nano (The Hindu Business Line, 2009). According to Crisil Research, the Nano has 41 million potential customers in total that could purchase a new car or switch to the Tata Nano (ibid.).

The initial interest also showed that the masses are interested in the car which was supposed to revolutionize the Indian car market. 350,000 people put down a deposit to enter a lottery and be one of the 100,000 winners which got the chance to buy a Nano (Srivastava, 2009). Due to the low capacity of the buses and trains, and the problems with the roads in the monsoon time, people from rural areas are limited in their transportation and thus, the request for vehicle ownership grows (Freiberg, Freiberg and Dunston, 2010). Online polls have shown that especially males under 25 are the potential buyers of the Tata Nano, which goes against Mr. Tata’s main idea (Sangameshwaran and Chamikutty, 2009) which he shared at the commercial launch of the Nano: “I hope it will provide safe, affordable, four-wheel transportation to families who till now have not been able to own a car” (Tata Motors, 2009). Instead, the car appealed to market segments other than the ones Mr. Tata envisioned.

<table>
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<th>Year</th>
<th>Jan</th>
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<tbody>
<tr>
<td>2009</td>
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<td>2475</td>
<td>2501</td>
<td>2524</td>
<td>3018</td>
<td>3406</td>
<td>3610</td>
<td></td>
<td>17534</td>
</tr>
<tr>
<td>2010</td>
<td>4001</td>
<td>4105</td>
<td>4710</td>
<td>3525</td>
<td>3550</td>
<td>7704</td>
<td>9000</td>
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<td>5520</td>
<td>3065</td>
<td>509</td>
<td>5784</td>
<td>60473</td>
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<tr>
<td>2011</td>
<td>6703</td>
<td>8262</td>
<td>8707</td>
<td>10012</td>
<td>6515</td>
<td>5452</td>
<td>3260</td>
<td>1202</td>
<td>2936</td>
<td>3868</td>
<td>6401</td>
<td>7466</td>
<td>70784</td>
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<tr>
<td>2012</td>
<td>7723</td>
<td>9217</td>
<td>10475</td>
<td>8028</td>
<td>8507</td>
<td>5605</td>
<td>5485</td>
<td>6507</td>
<td>5491</td>
<td>4004</td>
<td>3503</td>
<td>2202</td>
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<td>2013</td>
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Mr. Kant said that interest came from everywhere, “breaking all class barriers, age, gender, and psychographic profiles” (The Hindu Business Line, 2009). Tata Motors’ passenger vehicles division president added that “the consumer profile for the Nano will be fit-for-all” (Sangameshwaran and Chamikutty, 2009). The company’s attempt to extend the target group as much as possible, becomes evident after the statement of the Nano’s ad agency, Rediffusion YR: “The communication objective was to target the youth, women or even households that own high-end luxury cars” (ibid.). According to Madhavan (2012), the Nano is bought by richer people who want a second or third car for the family but Tata was not successful to reach the main target group – the two-wheeler users looking for an upgrade. The Indian newspaper Livemint supports this point by stating that Nano buyers are these days more often wealthier.
Indians instead of families upgrading from a two-wheeler (Livemint, 2013). How the Nano sales varied through the years between its launch in 2009 up until April 2013 can be observed on Figure 13 above.

After the Nano found its way to the Indian streets, critics were not very satisfied with how Tata Motors evaluated the target groups. Thottam (2011) asserts that habitants in rural areas have difficulties in acquiring a Nano since the majority of the sales outlets are in large cities. The company eventually set the increase in the number of outlets to 800 by 2011 as one of the main marketing priorities (Chacko, Noronha and Agrawal (2010). Moreover, rural customers did not go to the showrooms in the outlets because they felt intimidated by dealers dressed in suits and ties (Radjou, Prabhu and Ahuja, 2012). By responding to this quickly and flexibly through creating a more informal atmosphere with, for example, casually dressed salesmen, Tata Motors showed their ability to make use of the jugaad mindset resting within the company (ibid.). In 2011, Tata could finally announce open sales for all states in India and stated the customers can purchase or test-drive the Nano in 874 sales outlets (Tata Motors, 2011a).

Moreover, Tata Motors might have underestimated the aspirations and expectations of the customers at the BOP. Giving the people more dignity and increasing the buyer’s status in the
villages by offering an affordable car were only two of Tata’s findings when they analyzed the potential customers (Freiberg, Freiberg and Dunston, 2010). Possessing the “world’s cheapest car” for many customers is actually a reason not to buy it due to the negative connotation of the word “cheap” (Ramsinghani, 2011). Emphasizing on the cheapness of the Nano instead of the appealing qualities is another reason why slightly better-off customers choose more sophisticated vehicles in the next higher price segment (The Economist, 2011). Additionally, the brand “Nano” was further diluted because Nanos were being used as taxi vehicles in Sri Lanka where Tata started to sell in order to boost production: “People still want a vehicle to be a status symbol, […]”, says an angry Sri Lankan owner of a Nano after people were asking him if this is “that taxi car” (Thottam, 2011). In 2012, Tata Motors could announce that the Nano is among the 10 best-selling cars in India and explained that refocusing the marketing effort at women and young people was helpful; so was the offering of the color orange in order to change the perception that the Nano is the poor man’s car (Raj, 2012).

4.3.7. The Nano in Europe

The Nano met all of the Indian requirements and regulations and as Mr. Tata asserted, the car was “[B]uilt to meet all safety standards, designed to meet or exceed emission norms and be low in pollution and high in fuel efficiency” (Freiberg, Freiberg and Dunston, 2010, p.146). Nonetheless, meeting the Indian emission norms does not mean that the car was allowed to go on the Europeans roads due to the more stringent requirements. The Nano met the Euro 3 emission standards which were already outdated in Europe for new vehicles in 2008 (Wells, 2010), but became mandatory nationwide for new passenger vehicles in India effective October 2010 (The Hindu, 2010). From the same date, the latest emission norm Bharat Stage 4 which is equal to the Euro norm 4 became mandatory but only in urbanized areas of the country, such as the region of Delhi (DieselNet.com, 2009). The Nano was at that time also ready to meet Bharat 4 (Chacko, Noronha and Agrawal, 2010). Since January 1st 2011, all new passenger vehicles on sale in Europe are required to have Euro norm 5, and from January 1st 2015 on, the Euro norm 6 is mandatory for new passenger cars in Europe (European Union, 2011).

Besides the emission norms, the Tata Nano further lacks several features and requirements without which an appearance on European roads is neither allowed nor appealing to the customers. Even the more sophisticated versions that have a CD-player, an air conditioner, central locking and power windows, lack the European standard Anti-lock Braking System (ABS), as well as airbags, not obligatory by law though (CarTrade.com, 2013). Additionally,
no basic Nano-version is equipped with a rear wiper, electrically adjustable mirrors and driver seats, power steering, side impact beams, or a radio - just to name a few features considered to be standard for new cars on the European market for passenger cars, regardless the size or the segment (Wells, 2010).

The Tata Nano team is working on these discrepancies between the Indian and the European markets. “What we are currently doing is upgrading the car to meet different regulatory requirements”, stated Wagh (Chacko, Noronha and Agrawal, 2010, p.121). “That means enhancing the car from the point of view of safety, emissions and performance, so we may bring in new power trains, we may bring in improvements in its suspension, and such other things” (ibid.). These improvements in R&D are crucial for the Nano to reach safety and emission standards, assert Agarwal and Brem (2013) and add that compromising on e.g. quality, technology and material to lower the costs will not be sufficient for the European certification tests. In 2009, the world could see the improvements when Tata unveiled a superior model of the Nano including, for example, a more powerful engine, a more luxurious interior and exterior, better braking systems and an increase in length and width to meet the safety regulations for Europe, with the aim to go for sale by 2012 or 2013 (Chacko, Noronha and Agrawal, 2010). The Tata officials said that the safety and emission standards will all be met and even hybrid and electric power trains might be offered later on (Voelcker, 2009).

Mr. Tata admits that: “[I]nitially, we didn’t plan to market the Nano outside India, except perhaps in some developing countries of Africa and South East Asia. We have been driven by a change in demand. We suddenly realized that it could be of considerable interest in Europe […] . It won’t serve the same purposes in those countries, but will be in a niche that didn’t exist before” (Chacko, Noronha and Agrawal, 2010, p.120). Filling this niche will still be a difficult task since the European customers might perceive frugal innovations from emerging markets as a low quality product (Corsi, 2013). According to Wells (2010), however, the Nano will have a “profound and largely disruptive influence” (p.445) on the European automotive market if the inquiry for low priced cars rises. Additionally, in case that the company starts selling the Nano on the European market, competition will further arise from “nearly new” used cars rather than motorcycles (Wells, 2010). He argues that the stock of used cars is negligible in emerging markets whereas in Europe, the sales of used cars are much higher than the sales of new cars.
4.3.8. The Nano in other emerging markets

In the latest annual report of Tata Motors, Mr. Tata repeated his idea of the Nano as a suitable means of transport in other countries: “The potential market for such an affordable car is enormous throughout the developing world” (Tata Motors, 2012a). He gets more concrete in an interview with the Financial Times and states that the Nano attracts attention in Indonesia as well as in Malaysia and the company should exploit that (Crabtree, 2012).

According to its website, the Nano is currently being sold in Sri Lanka and Nepal (Tata Nano, n.d.a). Since Tata Motors were already the market leader in the neighboring country of Sri Lanka (Tata Motors, 2011b), it seemed that it was a logical step to utilize that market for the first international step of the Nano. The back-then Managing Director, Mr. Carl-Peter Forster, said that “[T]he Tata Nano will play a major role in the next phase of growth of our international business” (ibid.). Besides Sri Lanka and Nepal in 2011, Bangladesh is supposedly the next country where the Nano will be marketed. Jacob (2012) reports that Tata Motors plan to ship Nanos to the distributor of Tata vehicles in Bangladesh. Exporting disassembled units in order to save on shipping costs could be seen as one possibility for the Nano to find its way to other international markets out of South-East Asia. Referring to the president of Tata Motors in Indonesia, Raja (2013) states that in 2013 the car will be sold in Indonesia, because of the resilience of their market to the crisis as well as its promising future. Additionally, in 2011, the governor of Brazil’s second most populous state expressed his interest in the Nano very clearly by saying: “We would very much like to take Tata Nano to Brazil” (The Economic Times, 2011).

Furthermore, different blogs talk about the Nano being seen and sold (contrary to the official information on the Tata Nano website) in other developing markets around the globe. Nithyanandh (2012) blogs about the shipment of 50 Nanos to Vietnam for promotional runs to determine whether changes have to be made to make the Nano suitable for the Vietnamese market. Jamaica, as reported by Cooke (2012), received its first 15 Nanos in December 2012 and became the first Caribbean State to have Nanos on its streets, with Trinidad and the Dominican Republic being next on the list. However, we could not find any evidence that the cars are currently being sold in Jamaica or Vietnam. Different announcements of the Nano’s introduction to various markets (e.g. announcements of selling the Nano in Europe or the US) proved the necessity to evaluate such rumors carefully. On the other hand, these rumors about future sales show that there exists a worldwide interest in the product. Mr. Tata believes that in
the future, it will not be an issue whether a certain country is suitable or not: “I think the days when you designed a car for one particular region are over. There are no more borders” (Chacko, Noronha and Agrawal, 2010, p.119). With regard to the emission and safety standards, it should be noted that the Nano would not have these barriers in other regions as it has in Europe with the European norms. For example, one of the more developed economies in Africa, South Africa, will not implement the EU norm 5 equivalent of the emission standard until July 2017.

4.3.9. External challenges

The main challenge the project team faced was the move of the production plant from Singur in West Bengal to Sanand in Gujarat which besides a loss of money also caused a delay in the production (Freiberg, Freiberg and Dunston, 2011). Despite the opening of the factory in the summer of 2010, Tata could not produce so many cars to cover the huge amount of early orders, resulting in cancelations of many pre-orders (The Economist, 2011). The Nano had to be produced in another, already existing, factory of Tata Motors but this could not prevent the reduction of the first year’s production target from 250,000 to 50,000 cars (Thottam, 2011). Before the production moved, the company had to cope with unusually heavy rains in September 2007 which left portions of the factory under water (Chacko, Noronha and Agrawal, 2010). The move from West Bengal due to political protests was the main reason that the Nano went on the roads a year and a half later than scheduled (Business Today, 2012). Protests occurred due to the dislocation of farmers in the area of Singur by the government which has the right to acquire farmland for industrial development. The farmers were asking for a more adequate compensation (Thottam, 2011), and hence, the protests were not directed to the company or to the Nano itself but rather toward the outdated land-acquisition laws. The move of the plant after the costly disaster did not provoke only negative comments. Radjou, Prabhu and Ahuja (2012) see this decision as a perfect example for the jugaad mindset of Tata Motors. The authors praise Mr. Kant for following his instinct, instead of hiring a management consultant and taking more time for a solution which would have delayed the production even more.

Meeting the promised price was further complicated by an unexpected rise of the prices of oil, metal and other commodities in the spring of 2008 (Freiberg, Freiberg and Dunston, 2010). The consulting group Global Insight estimated that raw material costs account for 23 percent of
the Nano’s pre-tax price, compared to seven percent of the average American car (Rowley and Srviastava, 2008). The raw material costs have increased from 13 percent at the time when the Tata development started to the aforementioned 23 percent in 2008 (ibid.). This unfortunate development forced the project team to cut costs further than they had expected and for every single part, since a change in the design was no longer possible with the sales about to start soon (Freiberg, Freiberg and Dunston, 2010).

4.3.10. Worldwide media attention

Tata Motors got plenty of attention from customers, the media, competitors and other stakeholders throughout the whole development process of the Nano. The Hindu Business Line (2009) claims that 50,000 articles were written in newspapers worldwide in the time between the unveiling of the Nano in January 2008 and the actual launch in March 2009.

The Nano received tremendous amount of positive comments, and the expectations of the media were quite high before the launch. It was predicted that the Nano will change “the rules of the road for the auto industry and the society itself” (Naughton, 2008). Nano is about to “revolutionize travel for millions”, claimed the Guardian (Ramesh, 2009), while Time magazine claimed the Nano will become “one of the most important cars ever designed” and emphasized even before it went on sale that it “has become an important symbol of an emerging trend in the developing world, a new brand of innovation that makes more out of less […]” (Chacko, Noronha and Agrawal, 2010, p.107). Additionally, newspapers and magazines stressed the importance for the Indian society and for the developing world in general. Srivastava (2009) wrote about the blessings of an affordable car for the lower-middle class and quoted a salesman who described that driving a Nano felt like being a rich man. Freiberg, Freiberg and Dunston (2010) summarize the pride and expectations of the society after unveiling the Nano: “It was a Tata product, but it was India’s car. For the next year, India would bask in the limelight as news about its remarkable feat of ingenuity spread across the globe” (p.152).

The comments and articles about the Nano were far more critical few years after its launch. Pictures and videos of Nanos catching fire made authors criticize the safety standards of the car which, in turn, forced officials to offer safety upgrades and investigate the issues. They concluded that this was not a generic problem of the car but rather a problem of foreign materials being present in the exhaust system. BBC News (2010) called these incidents
“embarrassing” and “potentially hugely expensive” for the company. Moreover, the pricing strategy was in the center of criticism since the basic version was not sufficient for the customers, but an upgraded version was closer to the price levels of its competitors which made it unaffordable for many customers (Thottam, 2011). Many commentators agree upon the fact that the production delays, the fires as well as the stigma of being a “cheap” car affected customers’ impressions and consequently the sales figures. The growing criticism after the introduction of the car was clearly displayed through media headlines: “The Little Car That Couldn’t” (Thottam 2011), “Stuck in Low Gear” (The Economist, 2011), “Learning from Tata’s Nano Mistakes” (Eyring, 2011), “Tata’s Nano, the Car That Few Want To Buy” (Bajaj, 2010). It is important to mention that there is not much criticism about the driving experience, the material and the performance of the car itself. The key reason why the Nano is still a commercial flop on the Indian market, is the mistaken evaluation of the target group. Ramsinghani (2011) and Livemint (2013), just to name two of the sources, clearly assert that Tata Motors misjudged the BOP and, hence, designed an unsuccessful marketing strategy. Mr. Tata himself was disappointed with the development of the Nano in the last years. He admits that the company was not prepared to market the car as they should have, which consequently made the Nano lose its momentum (Business Today, 2012). While Mr. Tata sees the move to the new plant and the related costs as the main reason for failure, the newly assigned managing director Mr. Slym, clearly says that: “[T]he Nano’s marketing didn’t gel with anybody” (Livemint, 2013). “Scooter drivers weren’t attracted because others don’t think I’m buying a car, they think I’m buying something between a two-wheeler and a car. Anyone who had a car didn’t want to buy it because it was supposed to be a two-wheeler replacement” (ibid.). This confirms the criticism that Tata Motors was not able to attract the target customers.

Despite the harsh criticism, several authors stress that the Nano still has the potential to become a success. An expert from an Indian automotive magazine states that the sales numbers do not reflect the potential of the Nano and that it is still too early to comment (Bajaj, 2010). “Building a great brand takes time”, says the chairman of Bain India and adds that it is a “10-to-15-year process” (Thottam, 2011). There was only Steve Jobs with his Apple products who has pre-announced an innovation that would change the world and managed to deliver (Eyring, 2011). Many believe that criticism about the rising price, the safety issues and the fact that the target group was misjudged can be seen as normal on the way to become a break-through innovation.
5. Analysis

The purpose of the analysis is to discuss the empirical data within the theoretical framework, in order to find answers to the research questions and to fulfill the research purpose. The empirics serve as the source of evidence to be contrasted with what the theory posits. The analysis has three sections: understanding the case of the Nano through two different models that complement each other (consistent with the second research question), and a third sections focusing on the problems the Nano has in going reverse (based on the third research question). The analysis results in drawing relevant conclusions and uncovering further unclarities that might be an inspiration to researchers to continue the work in this promising area.

5.1. Typology of the Tata Nano – Part 1

In order to resolve our second research question which is related to Tata Nano’s potential of becoming a reversed innovation, we first need to determine what kind of innovation the Tata Nano is at the moment and then analyze the potential of the product going reverse.

5.1.1. Ideation

The first precondition for reverse innovation is that the idea should come from an emerging/developing country and that some of the following stages of development, primary market launch and secondary market introduction should take place in one or more advanced markets. Therefore, we need to examine the origin of the idea/technology behind the Nano, as the first step in the innovation flow (Corsi, 2012).

From what we have discovered, it is evident that the first innovation flow (the ideation) took place in India. The idea for a low-priced means of transportation for the numerous Indian middle class came straight from the CEO of one of the largest Indian multinational companies and was inspired by the drawbacks of driving two-wheelers in suboptimal conditions. In a country characterized by underdeveloped infrastructure, poverty and overpopulation, exposed to monsoons that influence the course of everyday life, and with the majority of its population living in rural areas, it is not hard to imagine how a small and affordable automobile could be appealing to the Indian market.
The “nano-idea” is closely related to the prevailing characteristics of the Indian society. Although considered an emerging market and a center of innovation with growing importance for the future, it was previously established that most Indian consumers are still struggling with poverty and cannot afford to own an automobile. This explains why an entire family riding on a scooter, as the one that inspired Mr. Tata in 2002, is a common sight on the Indian roads. The Nano was intended to revolutionize the automobile market in India.

Moreover, India is renowned for its frugal engineering skills – something that often arises out of necessity. Western affluent consumers with plenty of disposable income could probably afford to pay for more expensive innovations, while Indian consumers are looking for a low-cost no-frills solution to their problems. This is why the team at Tata Motors believed that the idea of a small and cheap car could in fact materialize. Despite the criticism directed at the company that the project might not be realistic, Ratan Tata had a vision and believed that his people could pull through such a remarkable project.

Micro cars have been present on the global market even before the Nano, but the true innovation lies in its frugality – Tata Motors succeeded in designing and building an automobile whose final price was set to be only $2,100 at the time. An important criticism at this point is that the actual price of the basic model has somewhat risen and in some Indian states, the car is nowadays sold at a price point of around $3,000 (Tata Nano, n.d.b). Nevertheless, finding a way to build the Nano was an outstanding achievement and a highly challenging cost-innovation effort. The company deserves to be praised for its accomplishment of stretching the boundaries of what is doable and realizable in the automotive and engineering world in general. What Tata has done corresponds with Govindarajan’s (2012c) perception of reverse innovation. To reformulate his statement, in the case of the Nano we can ask the question: “Why does a car have to cost $10,000?” Tata’s team could be said to have done exactly what the author suggests – assume nothing and use your imagination unburdened by constraints.

Based on the arguments above, it can be said that the first pre-condition for a reverse innovation is fulfilled and the Nano can be considered a frugal innovation initially conceived in the domestic Indian market and for the local consumers.
5.1.2. Development

Reverse innovation could also occur when the development stage of the innovation takes place in an emerging market, and later on the product is either launched or subsequently introduced in a developed market.

The empirical data also offer insight on the place of development of the Nano. In 2003, it was Mr. Tata who summoned a team of young engineers employed at the company and presented his vision to them (Freiberg, Freiberg and Dunston, 2010). The subsequently formed team of five engineers assigned on the project was also comprised of in-house young talent who dedicated themselves on this difficult mission. The wider team of around 15 engineers comprised imaginative and talented individuals who accepted their challenge. Their average age of around 30 years could be seen as an advantage enabling the team to foresee the realization of the project.

However, the development process for such an innovation did not run smoothly. Considering the difficulty of the challenge at hand, it is understandable that the outcome was surrounded by uncertainty. Building a small car is one thing, but building a small and ultra-cheap car is completely different. The production cost and the final price dictated everything – how the car will look like, what kind of materials should be used, where the engine will be placed, etc. For the team members it was not always clear how to proceed with the design of the car and at the same time preserve its low price target. Moreover, the development suffered several delays due to force majeure in the form of political protests and dreadful weather, which eventually led to the necessity to relocate the production. Due to the previously mentioned reasons including the high initial interest for the Nano, the production was moved from the far Eastern part of India to a factory on a far Western location in the country – approximately 2,000 kilometers away. Many trials and errors occurred during the development, but eventually the company was able to successfully launch the product.

Most of the key suppliers in the production of the Nano were European and Japanese companies operating worldwide (Wells, 2012). The key feature is that most of them also operate locally and thus have their own facilities in the region. For Tata Motors, this was a cost-lowering choice as collaborating with distant companies would have been an obstacle in achieving their 1-lakh-price goal.
In conclusion, another pre-condition for a reverse innovation is also fulfilled – the Nano was in fact born and raised in an emerging market.

5.1.3. Market introduction

The empirical evidence suggests that the Nano was from the beginning designed for India; hence, the primary market for the product was limited to the Indian and possibly other emerging markets. With this fact, the Nano fulfills the third pre-condition for having a potential reverse innovation. Western markets were not initially considered, because the Nano was meant to meet local conditions on its domestic market. However, the company changed its plans in terms of launching the Nano in advanced secondary markets but so far, this idea has not made its way to realization and the company is still working on this plan. Among the advanced markets most often mentioned as part of Tata’s plans are Europe and the U.S. Perhaps due to not knowing how the product will be received by the primary target market, the company was careful not to announce entry to advanced markets too early. For this reason, Mr. Tata stated that the Nano was initially planned to ease the lives of Indians and to open up a new micro-car segment on the Indian car market. Hence, this break-through project was initiated for the home market where the product first appeared in 2009. The next year, open sales started in several Indian states. In a sense, selling the car out of the country was not one of the main goals of the company but other developing countries were mentioned as an option, possibly because of the similar conditions in terms of infrastructure and customer demands.

Having uncovered evidence that the Nano is currently sold in other emerging markets, namely Sri Lanka and Nepal, it can be said that the product has completed the second optional step in the reverse innovation process which requires that the product is transferred from its country of origin to another emerging market. Up until this moment, the sales of the Nano in Europe have not yet commenced and therefore, the third step of the process is missing.

5.1.4. What is the Tata Nano?

This part of the analysis was based on Corsi’s (2012) model of reverse innovation flows employed because of its completeness and comprehensives. Having analyzed the three elements required for classifying an innovation in accordance with the model, we can conclude that the Tata Nano is currently not considered a reverse innovation. At this moment, the Nano can be described as a “Developing Country-Only Innovation”, meaning that the birth of the idea for
the product, its subsequent development and the market introduction, all took place in India which is considered a developing economy\textsuperscript{15}. As the product was afterwards launched only in other developing markets, it is safe to say that it is still a “Developing Country-Only Innovation” (see Figure 15 below). However, Tata Motors’ intention is to eventually take the Nano to Europe, which in theory is only one step away from reverse innovation. We can say that the Nano aspires to become a “Reversed Product Life Cycle” innovation which would be a clear-cut case and a strong example of reverse innovation. As the company is currently working on the secondary market introduction to advanced markets, the Nano can be said to have high potential of going reverse.

![](Figure 15: A map of global innovation flows (adapted from Corsi, 2012)

5.2. **Typology of the Tata Nano – Part 2**

In this section, we use our own model of reverse innovation as depicted on Figure 9 in order to approach the analysis from another point of view. By analyzing additional aspects of the Nano, namely its frugal, disruptive and jugaad features, we intend to perform a second test of the Nano’s reverse character that will complement the first part of the analysis.

To begin with, the empirical section of the thesis has provided us with sufficient data to isolate the frugal features in the product and to identify the signs of a jugaad philosophy within the

\textsuperscript{15} Corsi (2012) only makes a distinction between advanced and developing countries and therefore, India would fall under the latter category.
case. Tata Motors took on a unique challenge when they decided to pursue the idea of a 1-lakh car. The incredibly low target price was unheard of in the automotive world and many received the news of this bold undertaking with skepticism. Therefore, the low price of the product itself which does not compromise its quality is the first frugal feature of the Nano.

Regardless of the criticism and the difficulties, the fact remains that the company was in the end able to complete the project and to unveil the first car based on a different innovation philosophy, as compared to the Western way of innovating. The basic Nano model does not have an air-conditioner, nor central locking system, a CD player or automatic windows. Some of the features the Nano does have are only one wiper, small wheels and full-body construction. The designers have shown remarkable creativity by cutting down on features and costs literally everywhere they could to reach the target price. In addition, they have attempted to economize throughout the entire value chain by, for example, collaborating with few suppliers mainly located in India and producing only few color variants of the Nano. Hence, its design and development are the second and third observable frugal characteristics, in the sense that Tata approached product development from a different angle. They created the Nano from scratch by re-modeling the very idea of how a car should be conceptualized and produced.

Moreover, the Nano fits the definition of a “smart” product: it is a quite simple, maintenance-friendly and fuel-efficient product; it is much more affordable compared to the majority of competitors and it was introduced to the market within two years of its announcement. Regarding the reliability aspect, there has been a considerable debate whether the Nano is actually a safe car and to what extent it complies with safety regulations. As discussed before, the product complies with the safety standards in India which are nonetheless lagging behind the norms in Europe. In addition, there were few incidents of cars catching fire which Tata investigated and concluded that they are not related to malfunctions of the car itself. The main criticism about the Nano is not related to the quality but to other aspects of the product and the company’s strategy.

The Nano is certainly not a high-end product but it is also not a low-tech one. It can be easily imagined how such a product can meet the needs of resource-constraint customers, as the majority of the Indians are, since it offers significant value for money. In addition to being small and convenient, it is also considerably affordable. This kind of a cost innovation could easily appeal to the growing segment of cost-conscious consumers around the globe, hence opening up new worldwide business opportunities for Tata Motors but for other companies as
well. The micro-car segment got further developed and is now enriched with another popular model.

As previously established, low cost does not necessarily mean low tech and this is the point of reverse innovation. Moreover, the introduction of the Nano resulted in another by-product - creating social value. The Nano has received worldwide attention and popularity as a car for the people, it is a symbol for the ingenuity of Indian engineers and could be seen as an icon of India’s achievement in the micro-car segment. With its low price, the Nano was also intended to help less-fortunate families become car owners and forget about the unsafe two-wheelers.

In conclusion, the previously identified characteristics which constitute a frugal product can be seen in the case of the Nano. Therefore, it is safe to say that this is indeed a case of frugal innovation.

Following the theory, the Nano can be said to have some features of a disruptive innovation, although it is not a classical case of a product performing far worse than the standard more expensive automobiles from other manufacturers. Mainstream consumers might say that the product is inferior due to its lack of certain features, the use of inexpensive materials, smaller size than the competition and simpler design, but the quality of the product is on a satisfactory level and it cannot be said that the Nano performs poorly compared to other cars. In fact, any kind of complaints about the car itself cannot be found and Nano owners are, in general, satisfied with their purchase. The Nano matches the alternative stream in theory which suggests that a disruptive product can also be valued by the mainstream consumers and that poor performance at the time of introduction is not a requirement for disruption.

Four years after its official launch, there is not enough evidence that the Nano has disrupted its primary market in India. Despite the initially high interest and many bookings, customers seem to have lost interest and the company might have missed the opportunity to create larger “disturbance” on the automotive market in India. The move of the plant, the production delays, the raise of the price and in general, the unfavorable automotive market in the last years, are all influencing factors that buffered the impact the Nano might have had. The majority of the consumers in India which are mainly cost-conscious are now left out since the company increased the initially announced price, and people could decide to turn to the second-hand market and purchase an older automobile at approximately the same price.

On the other hand, consumers in Europe who have more disposable income that the ones in India could easily disregard the price increase. To them, this car is by all means more
affordable than the alternatives on the European market and therefore, the possibility that a niche market will be created is not to be overlooked. Due to its size and convenience, the Nano could easily become the second car in the household, a car for the young people or a convenient means of transportation in crowded city areas. In addition, the more cost-aware Europeans who are currently non-consumers could be attracted by the low price of the product and converted to first-time car owners. Hence, the disruptive potential of the Nano on developed markets is higher and more probable to occur. In such a situation, incumbents would be faced with a tough challenge of responding to the competition. For this to happen, Tata Motors would need to develop a wise strategy before entering Europe and carefully address the potential challenges that might arise, in terms of the marketing strategy, the distribution and the compliance with European safety regulations. The competition would also need to be tackled, since Europe has the small Mercedes Smart model and in the recent years, the Dacia brand has attracted a lot of consumers by offering lower price than most of its competitors.

Elements of the jugaad mindset are also observable in the case of the Nano. The car could be seen as a more sophisticated result of the influence of jugaad, as it is a creative solution intended to solve people’s everyday problems but it no way can be seen as an improvisation or a quick fix. An automobile is a complex product that needs to satisfy certain quality and performance standards. In this sense, the product itself cannot be termed “jugaad” but this philosophy present in India and in other emerging economies has certainly influenced the design and development of the product. In addition, as previously established, the fast move of the factory is seen as a creative solution of an imminent problem. Also, the way Tata changed the Nano’s showrooms by creating a simple and more welcoming atmosphere so that customers would not feel intimidated, was a fast solution to fix an obvious problem.

The team of designers who originally created the car was not driven by the Western approach to innovation. The goal was not to produce a revolutionary small car, no matter the cost. Instead, the designers were looking for a solution to a common problem in India and they did that by cutting down the cost to the bare minimum necessary for producing a safe and reliable car. Such a goal is difficult to achieve without the creativity and freedom of thinking dictated by the philosophy of jugaad. Moreover, being a relatively young team, it was easier for the designers to forget what they know about how to make a car and to unleash their creativity in designing a car that at a much lower price point than competitors.
Lastly, the Nano is considered as a frugal innovation originating from an emerging economy, launched first on its primary Indian market. It has left its domestic market only to be introduced in two other emerging markets. In conclusion, we can state that the Nano has the features included in our model from Figure 9. It is a frugal innovation influenced by the jugaad mindset, and it also has a disruptive potential. The only missing aspect is the transition from frugal to reverse innovation, or the path from India to Europe.

5.3. Closing the gap between frugal and reverse innovation – Part 3

What lessons can be learned from the Tata Nano case with regard to reverse innovation? Having concluded that the Nano is only one but crucial step away from becoming a reverse innovation, the last section of the analysis will focus on the challenges this product is facing in order to complete the reverse innovation process. The problems and obstacles we have identified are grouped in several categories. The suggestions and advice mainly address EMNEs but they are also something Western corporations can contemplate on.

5.3.1. Market-related challenges

To begin with, a frugal product already established on its domestic (primary) market in an emerging economy has higher probability of entering other developed markets. Therefore, knowing your domestic market and successfully launching your product there is a precondition for delivering a frugal innovation. For Western MNCs, this implies developing a deeper understanding of the emerging markets where they innovate, as those often differ significantly from their home markets. The reputation the product builds on its domestic market could precede the product wishing to enter the advanced markets. Once sales take off and the product becomes established locally, convincing the consumers in advanced markets about the benefits of owning such a car would be made easier and the innovation could be reversed. However, Tata Motors are facing a rather unfavorable situation in India with unsatisfactory sales figures and a reduction of the initial interest for their product, which in addition to the generally slowed down activity on the Indian automotive market in the past few years, results in uncertain prognosis for the future of the Nano. The recent sales figures of the Nano are the worst since its launch. For these reasons, it can be said that the Nano has not managed to establish a firm position in India and the company is still struggling with finding ways to promote the product and boost the sales. Hence, taking the Nano to Europe might be a premature decision at this stage.
In addition, Tata Motors have reportedly made several ill decisions with regard to their target groups and the requirements of the home market. Companies need to ascertain the legal, institutional and other requirements for the particular emerging market(s) where they wish to innovate, whether this concerns their domestic market as in the case of EMNEs or a foreign market as in the case of Western MNCs. Tata got hit by these institutional voids on their home turf when protesters forced them to move the plant, which can be seen as an evidence that even for the incumbents emerging markets can be a difficult work arena.

Moreover, Tata’s noble idea of giving the Indians a safe and affordable means of transportation as well as the Nano’s positioning strategy as the people’s car, might have been faulty. Namely, the target group of poorer families currently using two-wheelers was not reached. The question that arises is whether those consumers want to own a car at all or whether they stay loyal to the traditional ways of transportation that have been around for a long time. Moreover, the Nano’s low price turned out to be a double-edge sword - the reputation the Nano earned as being a cheap car does not appeal to the middle-income consumers who have more disposable income and who would rather opt for a model from the next price level. Instead of solving the problems of common families, Tata delivered a convenient car for the youngsters and the more affluent families who now have a second car in their garage.

Furthermore, companies need to be prepared to make smaller steps on the way to the developed markets, which means making an effort to enter other emerging markets first, in order to test the adoption of different models or new applications, engines, and other components required for the developed markets. As Tata Motors did by entering their neighboring countries Sri Lanka and Nepal, it could be a good strategy to start by serving nearby markets and thus reduce the shipping costs and the transaction costs in general, before introducing the product to other emerging markets. Attempting to enter any market is not an easy endeavor, and it is even more difficult for companies from the developing world to attract consumers from developed markets.

In addition, the company needs to have a clear and well-developed strategy for entering advanced economies and work steadily on achieving it. Especially when the conditions on the secondary market differ to a significant extent from the domestic market, companies should be careful how they approach advanced markets so that these efforts are not in vain. The Nano’s launch in Europe was not initially planned but, due to the raised interest, the company reconsidered this idea even though emission standards and other requirements for entering the
European market were not fulfilled. Such a shift in the strategy changed the company’s focus and market efforts. Moreover, the Nano raised expectations throughout the world which they could not meet, thus potentially diluting the “Tata” brand in other industries where this MNC operates. This may also be harmful for India as a country since the Nano was seen as the symbol of the Indians engineering capabilities. If Tata does not deliver, this can affect the reputation of Indian engineers and companies in this field.

Lastly, having in mind the differences between consumers and markets in developed and developing economies, it should be noted that perhaps not every type of product has the potential to become a reverse innovation. This is something that every company needs to assess in advance in order to decide whether such an effort is worthwhile, or whether they should avoid advanced markets. More complex products such as automobiles which are not an every-day purchase might not be the most suitable candidates for sale in an advanced market. Due to the origin of these products, potential consumers might be even more reluctant to consider the Nano, especially when they are unfamiliar with the brand and the company that produced it. In this case, Western companies innovating in emerging markets might find it easier to introduce those products back on their home markets where they have already built a reputation for themselves. Hence, European consumers might be skeptical when it comes to the Nano which puts Tata Motors in a disadvantaged position.

5.3.2. Company-related challenges

Establishing a network of reliable and engaged suppliers seems to be important for a cost oriented and frugal innovation. It is not enough if the company that conceived the idea is the only one in the value chain to follow a frugal innovation path. Other involved companies need to understand the principles of frugality and be ready to implement them. A miss-match between the ways different companies approach the collaboration can spell failure. Therefore, partnerships or other types of co-operations with local companies can help overcome some obstacles. For example, an EMNE collaborating with local Western companies in an advanced market could gain access to their distribution and promotion channels. This could be a valuable suggestion for Tata about how to approach the Nano sales in Europe. Tata’s acquisition of the Jaguar and Land Rover brands might not be of any help in this case, as using the same distribution channels or promotion both for the ultra-cheap Tata Nano as for the luxury automobiles might be a harmful decision. On the other hand, a Western company innovating in
an emerging market can gain a deeper understanding of the local market and the problems that local consumers need to get fixed.

The innovating company also needs to ensure unanimity among its own employees regarding the end goal of their efforts. Most importantly, the management has to be on the same page and carefully evaluate the trade-off between the potential gains and losses. Mr. Tata publicly stated that the Nano is not about profit or publicity, but it was born out of a philanthropic drive to give something to his fellow countrymen. This corresponds with the guiding philosophy of the Tata group itself which is to give back to the society what came from the society. On the other hand, Mr. Kant stated something different. In his view, Tata was not a charity but a business that intends to make profit with the Nano and to grow further, as well as to make a difference. Such a discord can have consequences for the entire company. In certain cases, companies need to show pragmatism when deciding whether a certain project is worthwhile or whether it might bring only losses. In the case of the Nano, it is difficult to find out whether the company is able to cover its costs with the current price of the product and whether they will be able to make a reasonable profit. It is not known how much the entire endeavor cost the company and what the actual costs of producing the car amounted to. Therefore, starting off with such an ambitious and noble goal just to create a sensation or chase an unrealistic dream is an approach that can hurt any company.

5.3.3. Consumer-related challenges

Tata Motors and other EMNEs need to be aware that frugal products might be seen as cheap on the developed markets. The low price in general is sometimes interpreted by customers as a sign of low quality and it is difficult to convince the buyers otherwise. Tata Motors learned this lesson already on their domestic market, when many of the more affluent middle-class potential consumers stated that the reason why they are not interested in the Nano is because they would not like to be seen driving a cheap car. On the advanced markets, there are additional problems besides the price of the product. Most customers are likely to be unfamiliar with the Tata brand, its products and reputation, and for these reasons purchasing a car from an “anonymous” company could be seen as risky. Moreover, automobiles are often seen as status products and some consumers would gladly spend slightly more on a better model from a renowned manufacturer if this would increase their status in the eyes of their peers.
Both the consumers and the company initially had high expectation regarding the Nano. Before the Nano was launched, the pre-orders from future buyers were quite high and the company built a new factory with high annual capacity in order to meet the future demand. As Tata has problems to keep up with what the world is expecting from them, the image of the Nano could be undermined. If a company is not certain whether a product will be a success or it might turn out to be a question mark, the company needs to be careful with playing with the expectations.

The consumer-related challenges are a broad topic which lies outside of the scope of this thesis. Suffice it to say that the cultural aspects and differences concerning both companies and consumers from different countries and continents have been investigated in great detail in other theoretical areas. Such cultural issues are also relevant for reverse innovation, as they can influence the success of every company attempting to do business outside of the borders of its home country. Therefore, consumer-related challenges could be regarded as a separate topic that can be further investigated in the context of reverse innovation.

5.3.4. Supplier-related challenges

Companies engaging in reverse innovation need to find the right suppliers which can support the project and are located close by. Tata Motors did this by carefully choosing who to collaborate with and limiting their choice to renowned companies who also operate locally. They also kept the number of suppliers to as little as possible. It was stated before that suppliers were not expected to receive immediate financial benefits from the Nano project. Therefore, in the beginning stages of the project, Tata had problems to persuade some suppliers in the advantages of participating in the creation of the Nano, since some companies were quite skeptical about the seriousness and the viability of the project. When the company cannot make any predictions about the future of such a risky undertaking, future suppliers can be convinced by using arguments such as the positive experience they would acquire by working on low-cost innovations. Suppliers, especially Western ones, could learn a lot about frugal engineering and the jugaad mindset by working closely with companies from emerging economies. They could implement this experience and skills on other future projects, but also, they could be attracted by the possibility of future collaboration, should the leading company require the development of new models/variants. By agreeing to collaborate on a potentially successful product, suppliers could become more attractive to other companies as well. Additionally, suppliers could be interested in the potentially disruptive character the product might have, or as in the Nano case, by the possibility to participate in making history. Western MNCs looking for
suppliers on the local emerging market could offer the benefit of collaborating with a renowned company.

It can be argued that more complex one-time endeavors such as the Tata Nano are only possible if there are enough parties throughout the supply chain who are willing to participate and share the risks. Otherwise, it would be much more challenging for a company to pull through such a product successfully and to take the product abroad to advanced market without help from other companies. In this case, Western MNCs are again in a better position, as securing the collaboration of suppliers could be easier for a well-know company with a good reputation. The notion that more complex products are more difficult to be reversed may not hold true for every type of product and for every industry. Nonetheless, products based on simpler technologies could be said to face lower risks and hence, the reversal could be faster and simpler. These products could include food and other consumer goods, and products whose development does not require high R&D expenditures.

6. Conclusions

In the last chapter of the thesis, we shall summarize the findings of our research and analysis by giving the answers to our research questions, as well as outlining the suggestions for further research that arose during the course of our work.

6.1. Answering the research questions

In the beginning of this thesis, the research questions were formulated as follows:

1. Based on the literature review, where does “reverse innovation” stand in relation to other innovation literature streams?
2. How can the case of the Tata Nano be understood and explained through reverse innovation theory?
3. What lessons can be learned from the Tata Nano case with regard to reverse innovation?

The answer of the first research question was uncovered as a result of the literature review and it was presented as a concluding part of the Chapter 3. Namely, we came to the conclusion that reverse innovation is a novel and distinct stream in innovation theory that despite the
similarities with other types of innovation should not be treated as an identical phenomenon. We defined reverse innovation as a commercial approach of developing frugal products or service in emerging/developing markets and subsequently introducing those products (with or without modifications) in advanced markets. The development of these products is influenced by the jugaad philosophy and they could have the potential to disrupt developed markets. The reverse innovation process has three steps: developing frugal products in an emerging market, taking that innovation to other emerging markets (optional step) and lastly, introducing the innovation to an advanced market. Reverse innovation can be determined by the origin of the idea, the place of development of the product and the market introduction place (both primary and secondary market), where the last criteria is seen as most important. The term “reverse innovation” itself should not be used interchangeably with other terms such as, for example, “frugal innovation”, “jugaad”, “disruptive innovation” and “resource-constrained product development”. Our model of reverse innovation (see Figure 9) that we developed as a supplement of Corsi’s model (2012), states that, while frugal innovation can be considered a separate approach, it can also be a pre-condition and the first step of the process of reverse innovation. Moreover, developing frugal products is influenced by the jugaad mindset. In the end, disruptive innovation in this context can refer to the potential of reverse innovations to disrupt, mostly the developed markets, although disruption is also possible on the domestic emerging market.

Furthermore, reverse innovation is a practice that can be undertaken by both Western MNCs and well as EMNEs. The principles are similar in both cases, but these two different types of companies according to their origin, face different challenges in the reverse innovation process and could have different advantages that they bring in the process. Lastly, while we recognize the future potential of reverse innovation as an approach that could erase market borders, it is important to mention that the reversal of different types of products from different industries have different probabilities of success. We believe that reverse innovation could result in creating products that can appeal to both local and global consumers and hence, there will not be a need for local adaptation in the future.

In terms of the second research question, we have explained the Tata Nano as an unambiguous case of frugal innovation whose conception, development and introduction were to some extent influenced by the jugaad mindset, commonly present in emerging markets subject to resource constraints. In addition, this product was created by and EMNE or an emerging giant. We also argue that, once introduced, the Nano could have a potentially disruptive impact on the
European automotive market. In addition, the criteria determining whether we have a case of reverse innovation such as the origin of the idea for the Nano, the place of its development and its market introduction (both primary and secondary), are all clearly related to India and other emerging/developing markets (Sri Lanka and Nepal). It can be therefore concluded, that the Nano can be explained through theory as a potential case of reverse innovation, in that it fulfills all except for one requirement for reverse innovation: the last step or the transition of the product to a developed market. Here we argue that the probability for reversal was possibly higher in the beginning, before and shortly after the Nano was first introduced on the Indian market. At that time, the interest for the Nano was the highest. However, due to a series of unfortunate events and negatively influencing factors, the Nano has lost its momentum and has received a fair amount of criticism which makes it less attractive even for the domestic Indian market.

The aim of the third research question was to find out what lessons companies can learn from the case of the Nano, in terms of both positive advice and negative implications from the company’s actions. Some of the mistakes were the result of Tata Motors’ decisions, while others could not have been avoided. For example, the generally adverse situation on the Indian automotive market during the time of the global economic crisis seems to have corresponded with the time of introduction of the Nano, which had a negative influence on the car sales in general. Furthermore, the political protests which were the reasons for moving the production to a newly built plant cost the company one and a half years of delay. Also, the prices of raw materials increased during the time the Nano was developed which was one of the factors that influenced the rise of the originally promised price of the car.

On the other hand, the company seems to have misjudged its target market and pursued an unsuccessful marketing strategy. In the end, this people’s car did not manage to reach its intended audience – poorer families that were supposed to get a safe and cheap means of transportation. Most importantly, taking on such an ambitious challenge without a detailed analysis of the feasibility of the project could have been a crucial mistake in the case. Mr. Tata’s idea was undoubtedly noble and philanthropic, and its significance for people in emerging markets is potentially huge. Not only that, but the Nano is also a great achievement in the automotive world and this innovation will be written in history. Nonetheless, holding on the initial promise of delivering a 1-lakh car no matter what, might have been an unreasonable decision that forced the designers to cut down on costs to a point where the meaning of cost-
innovation was lost. The car might have too few features to be appealing to consumers, even the ones from the middle and lower classes, and it might not offer a satisfactory purchase.

In addition, there is an ongoing debate of the safety of the Nano and its compliance to various automotive standards which could be result of the Nano’s overemphasized frugality. Therefore, the product development process could probably benefit from going one step backwards and adding more features. In this case, the upgraded version of the Nano has higher chances of appealing to both Western and local consumers without the need to introduce further modification. The automobile market could be one of the areas where reverse innovation is more difficult, but nonetheless, we are in favor of the idea that the Nano still has a potential of becoming a reverse innovation.

6.2. Implications for further research

Due the time and resource constraints, covering more areas in this intriguing topic is not feasible. In this Master thesis, we focused on one particular example in an attempt to find answers for three of the many questions and dilemmas regarding reverse innovation. One of the by-products of our research was the discovery of even more suggestions for additional research that could be undertaken in the future by researchers interested in this topic.

One distinct pattern that can be observed by analyzing the existing literature is that most authors focus on discussing the development of frugal products and their acceptance among the developing world, while neglecting the second part of the approach which is to successfully market those products among sophisticated customers in the developed world. For the future of reverse innovation, we need to understand the reversing process better and especially the adoption of the frugal product among Western consumers. In this sense, more research is necessary to analyze particular product/services in order to uncover patterns that might show us which particular types of products or which industries are most susceptible to reversal. To be able to do this, we need to identify more examples of both Western MNCs that have succeeded in innovating from the bottom up by introducing frugal products in developed countries.

It was also suggested previously that, in certain cases, reverse innovation is also a business model innovation. Hence, further research should be conducted on reverse innovation as a potential type of a business model. In line with this, managerial and organizational issues within companies regarding how to organize for reverse innovation are another interesting and
under-researched area that can uncover what companies need to do and how to prepare themselves to innovate in emerging markets. This is especially useful for Western MNCs.

Theory could also benefit from additional research in terms of identifying examples of good and bad practices, since analyzing concrete examples of products and companies is one of the best ways to expand the current body of knowledge by producing generalizable findings. It is necessary that this empirical phenomenon receives more attention in the literature.

Cultural differences between emerging and advanced markets and customers could be an important influencing factor that can hinder the reversal of innovations. This area in business is already investigated to a great extent. However, additional research could analyze the topic of culture in the context of reverse innovation regarding the mindset of Western consumers and their attitude toward products from developing economies. Are they willing to adopt frugal products? Are there any obstacles in doing so?

One particularly interesting topic for further research is the possibility of modular reversal of innovations. For more complex products built from several components produced or developed separately (e.g. automobiles), there could be an opportunity for reversing only parts of the product, as well as the technology used to develop the components or the product itself. Such parts based on frugal innovation might have desirable features with potentially high success rate on the developed markets.

Last but not least, our research effort was directed at shedding some light on the concept of reverse innovation through the help of a real-life case study. We attempted to better define reverse innovation by drawing the line between different innovation theories. Although overlaps will always exist, it is necessary to put more effort in distinguishing different types of innovation as the difference between them is not merely terminological. We believe that the prominence of this topic will grow in the future, and therefore, we encourage authors to continue the research on reverse innovation.
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