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Frugal Innovation: Business Opportunities and Challenges for Multinational Corporations in Emerging and Developing Markets

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Executive Summary

Emerging and developing economies are currently growing at a significantly faster pace than their developed counterparts. While the real GDP of advanced economies is expected to grow by 1.7 and 1.8 percent in the years 2024 and 2025 respectively, the real GDP of emerging markets and middle income economies is expected to grow by 4.1 percent per annum. This rapid growth poses an opportunity for developed-market multinational corporations to realize market growth by expanding their business into these markets. However, operating in emerging and developing markets also brings novel challenges and constraints, to which entrants must adapt their strategies. For instance, these markets consist of a large low-income group that favors affordable and high quality products.

A concept that addresses the constraints of serving low income groups in emerging and developing markets is frugal innovation, a form of resource constraint innovation. Frugal innovations are products that are affordable, focus on core functionalities, and have an optimized performance level, thus catering to the specific needs of Bottom of the Pyramid (BoP) consumers. This research adopts the perspective of Multinational Corporations (MNCs) and explores frugal innovation as a potential solution to the various challenges MNCs face in emerging and developing markets. This study answers the following research question: “How can frugal innovation complement multinational corporations’ strategies to address business and operational challenges faced in emerging and developing markets?” It thereby links strategies, challenges, and frugal innovation in a novel manner.

To answer this question, frugal innovation strategies are identified in the literature and challenges and strategies of MNCs in emerging and developing markets are determined through a literature search and semi structured interviews with representatives of various MNCs.

Through the literature review on frugal innovation, five frugal innovation strategies are identified: The first strategy MNCs can employ is a Frugal Innovation Orientation (FIO) strategy, thereby solely focusing on an economic value proposition. Furthermore, they can introduce a local R&D center and engage in customer co-creation. The products offered in emerging and developing markets should be cheap, focus on core functionalities and have an optimized performance level. Finally, the products should also match the quality of the brand.

The most prevalent challenges faced by MNCs in emerging and developing markets, as identified through literature and interviews, include institutional voids, infrastructure deficiencies, low purchasing power, political instability, workforce challenges, trade regulations, consumer complexity, balancing standardization with adaptation, gaining product acceptance, and NGO push back.

To navigate these challenges, MNCs employ various strategies, including localization, tailoring products and pricing to local markets, collaborating with companies and NGOs, identifying core cus-

tomers' values, understanding the local culture and market, focusing on market potential, adopting frugal innovation, and engaging in social initiatives.

Upon comparing these challenges with the current strategies and the frugal innovation strategies, the following conclusion is drawn: The frugal innovation strategies potentially only solve the business challenges of consumer complexity, low purchasing power, and gaining product acceptance. However, these challenges are already being resolved by the current strategies of MNCs. Therefore, the frugal innovation strategies are not essential but can complement the current strategies. Some of the frugal and current strategies do overlap meaning that MNCs currently already use some of the identified frugal innovation strategies.

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Acronyms

BoP Bottom of the Pyramid.

DMNC Developed Market Multinational Corporation.

EMNE Emerging Market Multinational Enterprise.

ESG Environmental, Social, and Governance.

FIO Frugal Innovation Orientation.

FIOM Frugal Innovation Orientation to Market.

FIOVS Frugal Innovation Orientation to Value Shared.

FIS Frugal Innovation Strategy.

FMCG Fast Moving Consumer Goods.

GDP Gross Domestic Product.

ININ Inclusive Innovation.

KSF Key Success Factors.

MNC Multinational Corporation.

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1 | Introduction

1.1 Problem Statement

While the real Gross Domestic Product (GDP) of advanced economies is expected to grow by 1.7 and 1.8 percent in the years 2024 and 2025 respectively, the real GDP of emerging markets and middle income economies is expected to grow by 4.1 percent per annum (IMF, 2024). Low-income developing countries are projected to realize an even larger real GDP growth of 4.7 and 5.2 percent in those consecutive years (IMF, 2024). This offers an opportunity for Multinational Corporations (MNCs) in developed markets to gain market share by expanding their businesses into low- and middle-income countries. However, many MNCs have difficulty developing successful expansion strategies for these countries. Multiple reasons for this are named in the literature: According to Khanna et al. (2015), MNCs stick to their traditional strategies, consisting of standardized approaches with minor regional adjustments. Furthermore, it can be argued that existing, traditional business models and organizations are designed to serve a small group of wealthy consumers with advanced products (Zeschky et al., 2011). However, emerging markets consist of a large low-income group, a small but quickly growing middle-income group and a very small high-income group. Overall, the buying behavior in emerging economies differs from that of consumers in developed markets (Chea, 2021). Consumers in emerging markets favor affordable and high quality products (Adegbile and Sarpong, 2018) (Chea, 2021), seek extended product usage (Adegbile and Sarpong, 2018) and a misalignment with this market demand can negatively impact the profitability of corporations (Chea, 2021). Adegbile and Sarpong (2018) support this view and also note that balancing affordability, quality and sustainability of products while still ensuring profitability is challenging for MNCs. To answer to the demand of consumers focusing on affordability and value for money, the concept of frugal innovation can be considered. Frugal innovations take resource constraints into account to provide price sensitive customers with affordable products and services (Wohlfart et al., 2016) (Agarwal et al., 2017). The products are characterized by being functional, affordable, resource-efficient, easy to use, robust, and high quality (Weyrauch and Herstatt, 2016). Agarwal and Brem (2012) and Sharmelly and Ray (2018) emphasize the essentiality of frugal innovation for the success of MNCs in emerging and developing markets.

The aim of this research is to determine whether frugal innovation can be used by developed market MNCs operating in emerging and developing markets to overcome the challenges they face there. The research gap identified in chapter 2 leads to the following main research question: How can frugal innovation complement multinational corporations' strategies to address business and operational challenges faced in emerging and developing markets?

1.2 Scope of the Research

This research adopts the perspective of a Multinational Corporation (MNC) from a developed market that recognizes the potential of emerging and developing economies. The MNC operates in these markets, aiming to expand its customer base while facing various business and operation challenges that require solutions. Business challenges are those that pose obstacles affecting the company's long-term objectives, while operational challenges affect the daily business operations. Rather than viewing emerging and developing economies solely as sources of resources and labor, the MNC considers them as key target markets for its products or services.

This research considers economic development as the most effective means of improving living standards at the bottom of the economic pyramid (BoP). Achieving this requires significant investment, and MNCs, with their extensive resources, are well-positioned to contribute.

The concept of frugal innovation can be applied in many different settings, however it is most commonly studied in the context of emerging markets and low- to middle-income economies (Zeschky et al., 2011). Frugal innovation can be considered both as a process, where products are developed in a resource-efficient and cost-effective manner, and as an outcome referring to products characterized by a substantially lower cost, a concentration on core functionalities, and an optimized performance level (Albert, 2019) (Weyrauch and Herstatt, 2016).

Furthermore, frugal innovations emerge through either top-down corporate initiatives or bottom-up grassroots innovators. Since this research focuses on MNCs, and these organizations typically employ a top-down approach to frugal innovation (Wohlfart et al., 2016), this study adopts the top-down perspective.

Various terms such as “low- and middle-income markets,” “emerging markets,” “developing economies,” “majority world,” “third-world,” and “global south” are used interchangeably to describe similar regions (Silver, 2015). However, these classifications often lack rigid formal definitions. To ensure a broad geographical scope, this research will follow the IMF classification of “Emerging and Developing Economies”.

1.3 Relevance

1.3.1 Academic Relevance

This research will connect the literature on frugal innovation with that of business and operational challenges MNCs face in emerging and developing markets. It will identify how frugal innovation can help in approaching these various challenges.

This research will provide a review of the existing literature on strategies utilized by developed market MNCs when operating in emerging and developing markets. Furthermore, it seeks to provide an overview of the challenges faced by these MNCs in such market environments. Finally, the strategies and challenges identified through the literature and the interviews, will be linked to the underlying strategies of frugal innovation, thereby developing an understanding of how these strategies can help MNCs address the challenges they encounter in emerging and developing markets.

1.3.2 Societal Relevance

The societal relevance of this research is divided into three perspectives: the ecological perspective, the economic perspective, and the social perspective.

- **Ecological perspective:** The use of frugal innovations does have ecological benefits due to the efficient use of resources (Albert, 2019). As compared to conventional innovations, the ecological footprint of frugal innovations is lower due to the use of waste and recycled materials, the products modularity and the ease to repair them (Albert, 2019). According to Aggeri (2023) frugal innovation is based on designing products in such a way that their lifespan is extended. Any academic effort to support frugal innovation activities could thus be ecologically beneficial.
- **Economic perspective:** Frugal innovations have small profit margins but can still be extremely profitable due to the large potential customer base (Wohlfart et al., 2016). As Prahalad and Hammond (2002) emphasize, the four billion people earning less than \$2,000 per year constitute a largely untapped market and pose a great source of economic growth for MNCs.
- **Social perspective:** Investment in the world's lowest income markets will stimulate commerce and development at the bottom of the economic pyramid (BoP) and improve the lives of their inhabitants (Prahalad and Hammond, 2002). A large group of people currently does not have the financial means to be considered consumers. Due to their low price point, frugal innovations offer this group the possibility to advance from non-consumers to consumers, and include individuals on the margins of society in the mainstream (Khan and Melkas, 2020).

The societal benefit of this research constitutes of convincing MNCs of the potential of emerging and developing markets so that they increase their investments in these markets. Their investments in turn will stimulate the local economy and development at the BoP. Furthermore, by having the BoP as a target market, the development and adoption of frugal innovations could be enhanced leading to the afore mentioned ecological benefits.

1.3.3 MOT Relevance

In the masters degree of Management of Technology, technology is viewed as a corporate resource that can be used by companies to sustain a competitive advantage. Subjects focus on company strategies, management frameworks, effective and efficient operations, and (frugal-) innovation, among others. Through combining the concepts of frugal innovation and strategies, the proposed research fits very well into the masters degree of management of technology.

1.4 Outline

The next chapters are built up as follows: Chapter two describes how the gap in the current literature is determined and how the research questions follow from them. Chapter three discusses the research methods that are used, consisting of a literature review and semi-structured interviews. Chapter four discusses the results of the first sub-question, and chapter five that of the second sub-question. Chapter six answers and discusses the main research question and draws the conclusion.

2 | Knowledge Gap and Research Questions

In this chapter, the knowledge gap is identified and multiple research questions are formulated. The knowledge gap is determined by reviewing eight articles identified through a literature search. The selection process of these eight articles is depicted in figure 2.1. The search process itself is described in greater depth in appendix A.1.

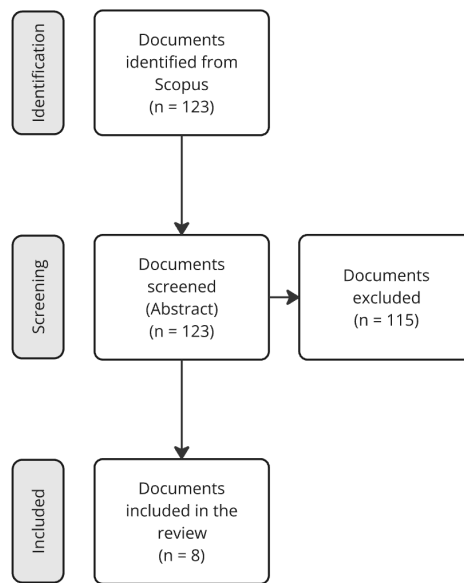


Figure 2.1: Article selection to determine the research gap.

2.1 Literature Discussion

The reviewed articles highlight emerging and developing markets as key opportunities for MNCs (Adegbile and Sarpong, 2018); (Agarwal and Brem, 2012); (Anderson and Billou, 2007); (London and Hart, 2004); (Roppelt et al., 2021), while also acknowledging the challenges these markets present (Adegbile and Sarpong, 2018); (Mortazavi et al., 2019); (Agarwal and Brem, 2012); (Liu, 2019); (Anderson and Billou, 2007); (London and Hart, 2004). Multiple articles describe the development of frameworks to approach the challenges in emerging and developing markets. Mortazavi et al. (2019) proposes Inclusive Innovation (ININ) for this, Liu (2019) develops a framework to obtain a standardization-adaptation

balance and Anderson and Billou (2007) emphasize the 4 A's (availability, affordability, acceptability, awareness) as key aspects.

Other scholars propose strategies for MNCs to successfully operate in emerging and developing markets (Agarwal and Brem, 2012); (London and Hart, 2004); (Sharmelly and Ray, 2018). Two of these ((Agarwal and Brem, 2012); (Sharmelly and Ray, 2018)) identify frugal innovation as a suitable strategy, while, Roppelt et al. (2021) seek to explain why MNCs engage in frugal innovation and how they can integrate frugal innovation in their global operations. Sharmelly and Ray (2018) determines that frugal innovation in MNCs is enabled through frugal engineering, bricolage, and the modular-design-scale capability of a firm. Roppelt et al. (2021) proposes a five step approach, which is based on organizational learning theory, describing how MNCs can integrate frugal innovation into their global operations. Both articles employ a qualitative single case study focusing on automotive and healthcare technology.

From this body of literature, it becomes evident that while there are opportunities for MNCs in emerging and developing markets, operating there remains a challenge. One way to approach these challenges is frugal innovation. Other concepts, like the 4 A's, disruptive innovation, inclusive innovation, and the S-A balance approach, overlap to some extent with the concepts of frugal innovation: The 4 A's include affordability, a key concept of frugal innovation as an essential success factor. Apart from that, their concept of acceptability requires the need for products that are adapted to unique customer needs. This is a key identity of frugal innovation as well. Disruptive innovations are innovations that create a new market through the introduction of a new product that is initially inferior to mainstream technologies. Frugal innovations also aim to create new markets and enable non-consumers to become consumers, through simpler (inferior) product propositions. Mortazavi et al. (2019) argue that ININ should be integrated into MNC's strategies for developing countries as it helps to overcome the challenges in these countries. ININ particularly aims to include poor and otherwise excluded members of society. According to Onsongo and Knorringa (2020), ININ does share certain goals with frugal innovation, however ININ focuses rather on poverty reduction and on the participation of marginalized actors, while frugal innovation rather focuses on design processes, business model innovations and resource consumption. The research done by Liu (2019) concerning the standardization-adaptation balance mentions product simplification as a new product development strategy, which is a key concept of frugal innovation.

2.2 Knowledge Gap and Research Questions

From these articles, a few key insights can be obtained: Firstly, it becomes clear that emerging and developing markets offer vast opportunities for MNCs to grow their business. Secondly, MNCs entering these markets must face new challenges to which they must adapt. Finally, one possible solution to some challenges in emerging and developing markets that is recommended in the literature, and already employed by some MNCs, is frugal innovation.

There is however a theoretical gap in the literature due to a lack of studies examining the relationship between frugal innovation, strategies, and challenges of MNCs in emerging and developing markets. Furthermore, there is an empirical gap: While there are articles describing the use of frugal innovation in MNCs, there is no evidence that frugal innovation is a viable concept for MNCs operating

in emerging and developing markets.

This study aims to solve these gaps by linking the literature on frugal innovation with that of MNCs in emerging and developing markets. The following research questions result from this literature gap:

- **Main research question:** How can frugal innovation complement multinational corporations' strategies to address business and operational challenges faced in emerging and developing markets?
- **First sub-question (RQ 1):** Which frugal innovation strategies can be identified from the literature?
- **Second sub-question (RQ 2):** What business and operational challenges do multinational corporations face in emerging and developing markets and what strategies do they employ in these markets?

3 | Research methods

This chapter describes the methods that were employed in this study and elaborates how the separate elements of the research are connected.

3.1 Research Flow and Structure

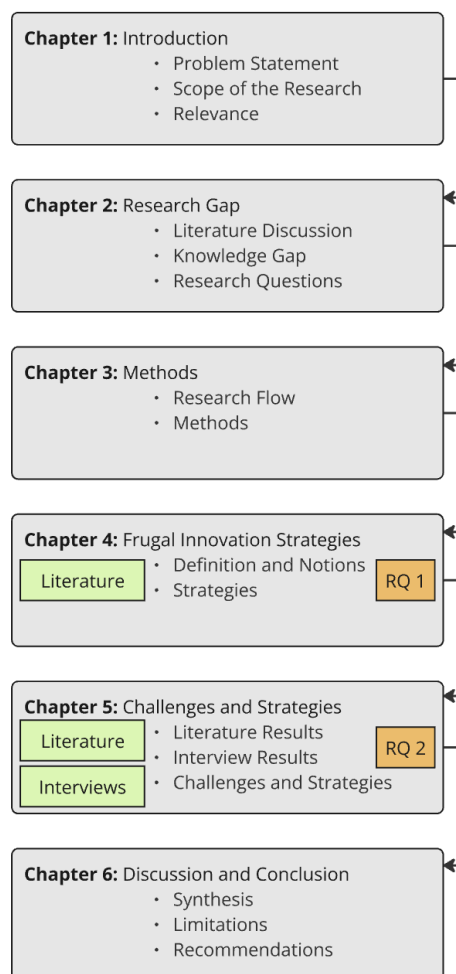


Figure 3.1: Research flow diagram.

Figure 3.1 depicts the research flow. In chapter two, the research gap and the research questions

are determined. Chapter three elaborates the methods that are applied in chapter four and five. In chapter four, the first sub-question is answered by reviewing the literature. In chapter five, the second sub-question is answered by reviewing the literature and conducting interviews. Chapter six contains the answers to the main research question, the discussion and the conclusion.

3.2 Methods in Sub-questions

The methods employed in this research consist of a literature review and qualitative semi-structured interviews. This chapter elaborates these methods and how they answer the research questions.

3.2.1 Literature Review

In order to answer the two sub-questions, two literature reviews are performed. The first literature review completely answers the first sub-question, while the second literature review aims to partially answer the second sub-question as depicted in figure 3.1. The literature is searched using the Scopus database and Google Scholar. A more detailed explanation of the search process is provided in the following sections.

Search Process Frugal Innovation

To obtain a deeper understanding of frugal innovation and answer the first sub-question, the Scopus database and Google Scholar were searched using various search terms. A systematic literature review was not performed. Additionally, articles recommended by colleagues or identified through a snowballing procedure are included.

Search Process Strategies and Challenges of MNCs in Emerging and Developing Markets

To identify articles covering the challenges and strategies of MNCs operating in emerging and developing markets and partially answer sub-questions two and three, the search strings provided in table 3.1 were used in the Scopus database.

Topic of interest	Search string
Emerging Markets	TITLE-ABS-KEY("emerging market" OR "emerging economy" OR "developing market" OR "developing economy" OR "developing country" OR "low and middle income country" OR "low and middle income economy" OR "LMIC" OR "growth market")
MNCs	TITLE-ABS-KEY("western company" OR "western corporation" OR MNC OR multinational OR MNE)
Strategy	TITLE-ABS-KEY("business model" OR strategy OR approach)
Challenge	TITLE-ABS-KEY(challenge OR problem)

Table 3.1: Search strings used in Scopus.

The search strings were combined using the "AND" operator in the Scopus database. The search was limited to articles that were published from 2018 onward to obtain the most recent and relevant

results. The search yielded 1088 Results as of the 22nd of September 2024. Then the results were limited to only include English language and to the "Business, Management and Accounting" subject area. Finally, the results were limited to include keywords for MNCs and their synonyms. These included: "Multinational Enterprise", "Multinational Enterprises", "Multinational Corporations", "MNEs", "Multinationals", "Multinational Companies", "MNE", "Multinational Firms", "MNCs", "Multinational Corporation", "MNC", "Multinational", "Multinational Enterprises (MNEs)", "Multinational Oil Companies", "Multi-national Companies", and "Multinational Corporation (MNC)". Through this the search-results were limited to 212 items. The complete search string is provided in the appendix A.2.

Upon reviewing the titles and the abstracts of the articles, a total of 22 articles were identified as being relevant to answering sub-questions two and three (2.2 and ??). Out of the 22 articles sought for full-text retrieval, 7 could not be accessed. The remaining 15 articles were thoroughly reviewed to identify challenges MNCs face in emerging and developing markets and strategies that MNCs apply in these markets. The search process is visualized in figure 3.2.

Apart from these 15 articles, the articles that were identified in the search for the research gap in chapter 2, were also assessed for challenges and strategies and are included in the results.

Challenges and strategies that are mentioned in the articles are included in the results based on the following inclusion criteria: The company in question must be a DMNC or a subsidiary of a DMNC. The country in question must be an emerging or developing market.

3.2.2 Qualitative Semi-structured Interviews

To obtain a broader understanding of the challenges and strategies of MNCs in emerging and developing markets, the methods used to answer the second sub-question are supplemented with qualitative semi-structured interviews. These interviews aimed at supporting the insights obtained from the literature. The interpersonal nature of interviews creates an environment for honest and open communication, enabling a deeper exchange of information. Potential challenges such as socially desirable responses are addressed in the discussion section.

The interviews were designed to take around 45 minutes in which approximately ten main questions related to the operations and challenges of the MNCs in emerging and developing markets were asked. To balance between structure and flexibility during the interviews and to ensure that all important aspects were covered, an interview guide was drafted. This can be found in Appendix A.

The interviews were conducted in english through Microsoft Teams and were video recorded and automatically transcribed using the built in software of Microsoft Teams. To analyze the interviews, the automatically generated transcripts were reviewed and corrected where necessary using the recording. The corrected transcripts were uploaded to ATLAS.ti, a software facilitating the systematic analysis and interpretation of large amounts of unstructured and semi-structured data. The software was used to mark passages and extract quotes. Passages were color-coded based on their topics, which included challenges, strategies, product identities, and examples. The quotes that were included in this report are adapted to improve readability without altering the connotation.

Potential interview participants were approached through personal networks and LinkedIn. The interviewees were current or former employees of Developed Market Multinational Corporations operating in emerging markets. Due to time constraints, no further strict selection of interview partners

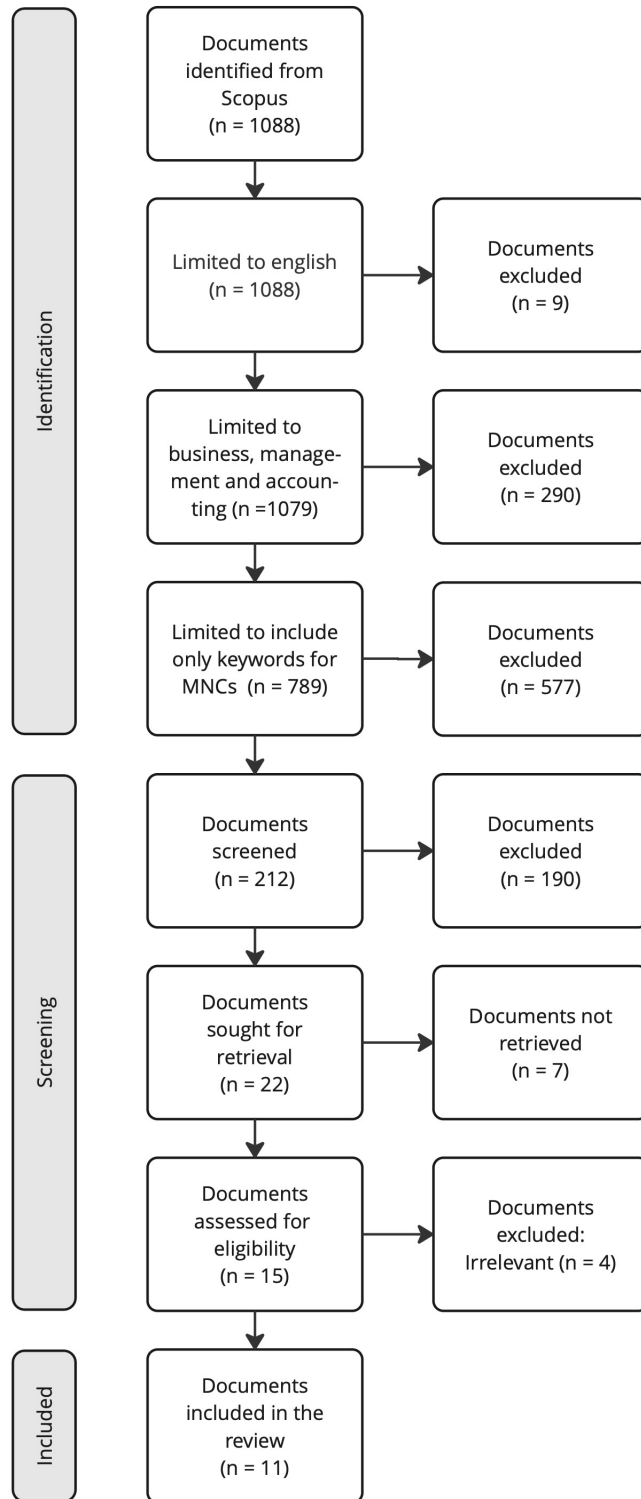


Figure 3.2: Search process and literature selection to identify challenges and strategies.

was performed. To obtain a broad understanding of companies in emerging and developing markets, a diverse set of case companies from different industries was selected. To substantiate the results and guarantee generalization of the results, eight to ten interviews were aimed for. However, this amount was not reached and three interviews were conducted.

For conducting the interview, the human research ethics process as specified by the TU Delft was followed. In order to obtain the mandatory approval from the Human Research Ethics Committee (HREC) for interacting with human research subjects, the following documents were drafted: The "human research ethics checklist" aids in identifying possible risks, such as data breaches, and proposing mitigation steps. The "informed consent form" summarizes the most important points for the interviewees. The "data management plan" elaborates what type of data are collected, how they are stored, and how they are used. Upon submitting these three documents to the Human Research Ethics Committee (HREC), approval for conducting the interviews was granted.

The case companies and their respective sources are presented in table 3.2. The interviews took place in November and December of 2024.

Company	HQ Location	Sources	Interview Partner	Interview Duration
1 - Healthcare Technology	The Netherlands	Interview & Presentation	Senior Global Partnership Manager	38 min
2 - Fast Moving Consumer Goods	United Kingdom	Interview	R&D Lead	61 min
3 - Home Appliances	The Netherlands	Interview	Chief Procurement Officer	24 min
4 - Furniture	The Netherlands	Gray Literature	-	-

Table 3.2: Case Companies.

3.2.3 Additional Methods

Since the targeted amount of interviews was not reached, the results had to be complemented through other means. Many of the results obtained through the interviews could also be obtained through consulting gray literature. Therefore the results of MNC four in table 3.2 were entirely based on gray literature. The results of MNC one were complemented through attending a presentation hosted by a former employee. The gray literature search consisted of using the Google search engine and searching for articles and documents addressing the strategic advancements of a furniture retailer in the Indian market. Through this, four sources were obtained, including a document drafted by the company itself and articles covering statements of company representatives.

The strategies and challenges identified in the literature and the case companies were listed, and only those that were mentioned by multiple sources were included. Furthermore, similar challenges and strategies were combined into overarching categories. The frugal innovation strategies and the current MNC strategies were then compared and linked to the challenges they address.

4 | Results 1

Frugal Innovation Strategies

This section presents findings that address the first sub-question of this research, and provides tangible strategic actions derived from frugal innovation. It commences with a definition, and a summary of different notions of frugal innovation. Furthermore, the link to sustainability and research on frugal innovation strategies is elaborated. Finally, based on these results, a set of frugal innovation strategies is provided.

4.1 Definition of Frugal Innovation

Scholars define frugal innovation in many different ways. Table A.4, provided in appendix A.4, illustrates these different definitions. Drawing from these perspectives, frugal innovation in this research is defined as follows: Frugal innovation refers to both the process and the outcome of developing cost-effective, resource-efficient products, services, or business models that meet the basic needs of resource-constrained consumers, particularly in emerging and developing markets. It emphasizes affordability, accessibility, and core functionality while minimizing unnecessary complexity and resource usage. Frugal innovation often arises from financial, technological, or material constraints and aims to deliver "good enough" innovative and sustainable solutions.

In the following sections, frugal innovation and its different interpretations will be explored in greater depth, offering a more nuanced perspective on the concept.

4.2 Notions of Frugal Innovation

Frugal innovation can both be considered as a process and as an outcome (Albert, 2019). As a process, it involves the development of products in a resource-efficient, cost-effective manner. As an outcome, it refers to a specific product that is characterized by a substantially lower cost, a concentration on core functionalities, and an optimized performance level (Weyrauch and Herstatt, 2016). In the creation of frugal innovation, two major approaches can be distinguished. One is through corporations and is considered as a top-down approach, the other is a bottom-up approach that is enabled by grassroots innovators. Both approaches feature products with a low price and features that are restricted to the core needs of a price-sensitive customer base. Whereas the individual grass-root innovator rather aims to solve a problem in their own community and aims for social sustainability, the corporate frugal inno-

vation is motivated by market opportunity and aims primarily for economic sustainability. (Wohlfart et al., 2016)

Even though the target group of frugal innovations consists mainly of resource-constrained and cost-conscious low- and middle-income individuals in emerging and developing economies (Albert, 2019), frugal innovations are not bound to certain geographical locations (Wohlfart et al., 2016). Some frugal innovations are also available in developed and industrialized markets and are then commonly referred to as “reverse innovations” (Weyrauch and Herstatt, 2016). Agarwal and Brem (2012) define these as follows: “Reverse innovation involves new products developed in emerging markets, which are then modified for sale in developed countries.” The introduction of frugal innovations in developed markets as reverse innovations can pose a threat to corporations that have these markets as their traditional home markets where they sell high-end products to affluent consumers (Wohlfart et al., 2016). By offering low cost alternatives, they might risk cannibalizing their existing markets (Wohlfart et al., 2016).

This research focuses on MNCs and therefore it is especially relevant to mention how MNCs currently develop frugal innovations rather than how grassroots innovators approach this development. From the available literature, it can be concluded that frugal innovations are mainly developed in R&D centers that are located in the targeted market. For instance, Wohlfart et al. (2016) describes how Siemens SMART line healthcare products are developed by local R&D facilities close to the targeted consumers. Also Zeschky et al. (2011) researched this topic and conducted 24 interviews with five firms to explore how western corporations organize frugal innovation efforts. The frugal innovations developed by these firms had all been developed by their subsidiaries in China. Wohlfart et al. (2016) concludes that close collaboration with customers is a success factor of corporate frugal innovation.

Consequently, scholars underline the importance of local development of frugal innovations. Zeschky et al. (2011) emphasize the critical role of local R&D departments in ensuring the success of the developed frugal innovations. The authors conclude that such innovations must be developed locally, as they cannot simply be adapted from existing products that have been designed for Western markets. To understand and effectively address the needs of the target group, local involvement is essential. A deep understanding of the environment in which the innovation will be used is required. Furthermore, the authors highlight the importance of granting local R&D teams a considerable degree of autonomy. This allows them to accurately identify the needs of the local target group and translate these specific needs into the development of the frugal product. (Zeschky et al., 2011)

When offering frugal products in developed markets, it is also important to have an understanding of the customers needs. Wohlfart et al. (2021) do three case studies on frugal innovations in developed markets and identify customer co-creation and ideation as two major success factors in the development process of frugal innovations. They refer to developed markets according to the World Bank’s high income countries which have a GNI of more than 12,375 USD per capita.

Challenges of frugal innovations are mentioned in the research of Wohlfart et al. (2016) who emphasize that corporate frugal innovations that mostly focus on social and environmental sustainability often seem to fail. Apart from that they note that frugal innovations should reflect the quality of the brand that produces them in order to not endanger the name and other products of that brand.

4.3 Frugal Innovation and Sustainability

Frugal innovation has a strong link to sustainability (Albert, 2019), (Wohlfart et al., 2016). Brem and Wolfram (2014) conclude that frugal innovation is characterized by a medium sustainability orientation and Weyrauch and Herstatt (2016) identify ecological sustainability as an attribute category of frugal innovation. Due to these connections between frugal innovation and sustainability, the literature regarding this is discussed further.

Sustainability can be subdivided into three categories, namely; ecological, social, and economic sustainability, also known as the triple bottom line. Frugal innovations can, but not must, contribute to all of these three sustainability factors (Wohlfart et al., 2016). Albert (2019) names frugality, resource constraints, robustness, no-frills design, reduced complexity, and simplicity as the main arguments for the positive connection between frugal innovations and ecological sustainability. The ecological sustainability of frugal innovations is enhanced through the efficient use of, often sustainable and locally sourced, resources. As compared to conventional innovations, the ecological footprint of frugal innovations is lower due to the use of waste and recycled materials, the products modularity and the ease to repair them (Albert, 2019).

Weyrauch and Herstatt (2016) assume that ecological sustainability is often not the primary focus of frugal innovation, they conclude however also that frugal innovation often contributes to ecological sustainability by reducing the use of resources (Weyrauch and Herstatt, 2016). Also Wohlfart et al. (2016) notes that the positive ecological impact of frugal innovations is rather a side effect since the primary focus is on economic and social sustainability. In general, the main objective of corporate frugal innovations is the economic sustainability, whereas the grassroots innovators are rather aiming for social sustainability (Wohlfart et al., 2016). Wohlfart et al. (2016) notes that corporate frugal innovations that are developed with mainly ecological and social sustainability in mind, are more likely to fail.

The ecological sustainability might be compromised by an unsustainable extraction of raw materials and production, in order to maintain the affordability. Through the affordability and accessibility to frugal innovations, consumption rises as well, leading to more production, resource consumption and waste creation. Ecological threats might be created through the improper disposal once the frugal innovations reach their end-of-life-stage (Albert, 2019).

Frugal innovations are also considered to be socially sustainable. Through their affordability and accessibility they ultimately support social equity, empower the Bottom of the Pyramid (BoP) and contribute to ending world hunger and social injustice (Albert, 2019). A possible threat to the social sustainability of frugal innovations is however the socially unsustainable extraction of raw materials that might be used in frugal innovations (Albert, 2019).

Considering economic sustainability, frugal innovation is regarded as an opportunity for firms from developed economies to benefit from the fast growth of developing economies and to enhance their competitive advantage (Albert, 2019). However it can also pose a threat, if existing high-end products are cannibalized through sales of lower profit yielding frugal innovations (Wohlfart et al., 2016). Apart from that, a company's image might be damaged if the frugal innovations are qualitatively inferior to previous non frugal products.

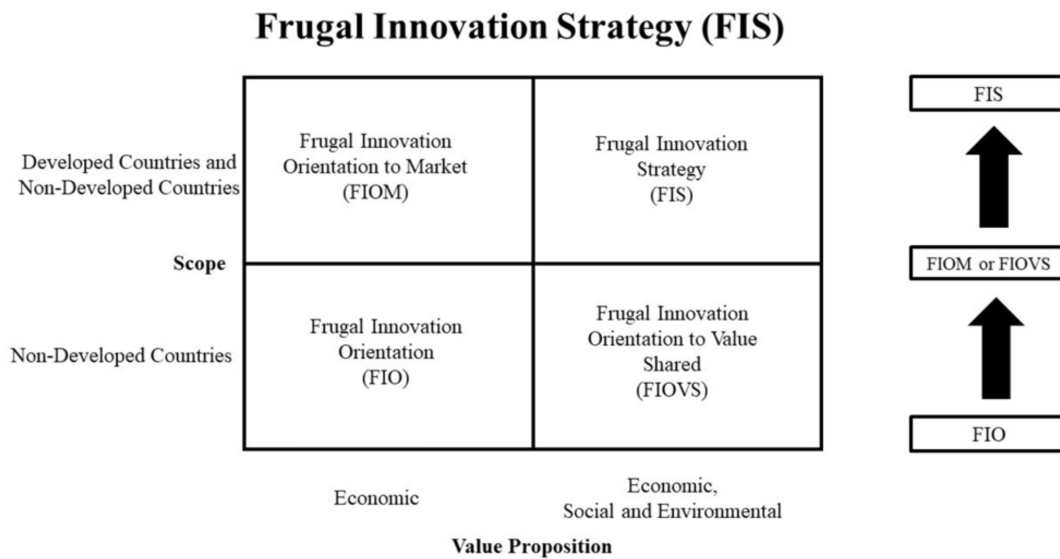


Figure 4.1: Frugal Innovation Strategies. From Santos et al. (2020).

4.4 Frugal Innovation Strategy

Santos et al. (2020) address frugal innovation as a strategy that aids companies to realize innovation in resource-constraint environments. The authors develop a framework that distinguishes between four different levels of frugal innovation strategies. The first level is the Frugal Innovation Orientation (FIO), where the value proposition for the product is limited to economic benefits and the scope is on non-developed markets. The intermediate level of frugal strategy development consists of Frugal Innovation Orientation to Market (FIOM) and Frugal Innovation Orientation to Value Shared (FIOVS). FIOM is characterized by an economic strategic purpose that is not limited to developing markets but also focuses on developed markets. A company that moves from FIO to FIOM can do so through reverse innovation. In the case of FIOVS, a company will maintain its focus on developing markets however it will also include social and environmental value creation for stakeholders in its value proposition. The advanced level is the Frugal Innovation Strategy (FIS) and is characterized by companies that serve both developed and developing markets and offer economic, social and environmental value. (Santos et al., 2020)

Wohlfart et al. (2016) mentions that the focus of corporate frugal innovation is mainly on realizing economic sustainability, comparing this to the previously mentioned research, this would fit the FIO and FIOM level. Albert (2019) mentions that the target group consists of resource-constrained and cost-conscious low-and middle-income individuals in emerging and developing economies, which is consistent with the the FIO level.

While the framework developed by Santos et al. (2020) enables the classification of frugal innovation strategies into four different levels, the literature mentions additional more specific actions that can be linked to such strategies. Zeschky et al. (2011) emphasizes the critical role of local and autonomous R&D departments for the successful development of frugal innovations. This specific strategy can be linked to all four frugal innovation strategies by Santos et al. (2020).

4.5 Frugal Innovation Conclusion

This section discusses the previously introduced literature, and provides a set of frugal innovation strategies, thus answering the first sub-question.

The focus of frugal innovation can be on economic, social, or environmental sustainability, and corporate innovators that do not primarily focus on economic sustainability often fail in their efforts (Wohlfart et al., 2016). Santos et al. (2020) differentiate between four different frugal innovation strategies, with different scopes and value propositions, this is depicted in figure 4.1. The lowest tier strategy, the frugal innovation orientation (FIO), focuses only on developing countries and has a purely economic value proposition. The highest tier strategy, the frugal innovation strategy (FIS), focuses on both developed and developing markets while offering economic, social, and environmental value. This latter is the most complex to achieve, and thus in line with the findings of Wohlfart et al. (2016). Therefore, the first principle that can be extracted from the literature is that corporations should initially employ a FIO and focus primarily on an economic value proposition.

Zeschky et al. (2011) mention the importance of local R&D centers to cater to the needs of customers. Wohlfart et al. (2021) also names customer co-creation and ideation as a frugal innovation strategy. From both articles, it follows that frugal innovations are mainly developed in R&D centers that are located in the targeted market (Wohlfart et al., 2016), (Zeschky et al., 2011). The second and third principles are therefore the introduction of local R&D centers and customer co-creation respectively. Furthermore, consumers in emerging and developing markets favor affordable but high quality products (Adegbile and Sarpong, 2018), (Chea, 2021). To cater to the needs of these value conscious consumers, products should correspond to the frugal product characteristics determined by Weyrauch and Herstatt (2016). These specify that frugal innovations have a significantly lower cost than conventional alternatives, focus on core functionalities, and have an optimized performance level. Finally, Wohlfart et al. (2016) underlines that frugal innovations developed by corporations should still reflect the quality of the brand, in order to not damage that brand.

From the literature on frugal innovation the following strategies are extracted:

- Implementation of a FIO strategy.
- Introduction of a local R&D center.
- Engaging in customer co-creation.
- Products should be cheap, focus on core functionalities, and have an optimized performance level.
- Products quality should match that of the brand.

5 | Results 2

Strategies and Challenges of MNCs

In this chapter, the challenges faced by MNCs and the strategies MNCs employ in emerging and developing markets are presented. Firstly, in chapter 5.1, the challenges and strategies resulting from the literature search, which is described in the methods section 3.2.1, are presented. In appendix A.5.2, all challenges and strategies from the literature can be found in table A.6 and table A.7 respectively. The results from the case companies are provided in chapter 5.2. In appendix A.5.3, the challenges and strategies from the case companies are provided in table A.8 and table A.9 respectively. All resulting challenges and strategies are consolidated in chapter 5.3 and chapter 5.4 respectively.

5.1 Results from the Literature

Adegbile and Sarpong (2018) discusses challenges in the context of MNCs developing disruptive innovations at the BoP in Africa. The authors distinguish managerial and institutional challenges. The managerial challenges that are listed by Adegbile and Sarpong (2018) are excluded from these results, since the focus of this research is not on internal challenges of a corporation, but rather on external challenges corporations encounter in emerging and developing markets. The first institutional challenge mentioned are infrastructure deficiencies, including limited road, electricity, and ICT access. These deficiencies again lead to difficulties for MNCs in accessing BoP markets. The second institutional challenge mentioned by Adegbile and Sarpong (2018) is the consumer culture. Many consumers only have a small disposable income, and those consumers whose incomes are rising, are still extremely value conscious. The third challenge for MNCs are the poor educational system and an absence of R&D activities in Africa. These factors make it difficult to tap into local knowledge. Furthermore, it can be challenging for MNCs to comprehend the local political conditions and community leaders. While there are countries with stable governments, there still are many African countries where political unrest prevails. A final challenge named in the article are the lack of patent protection and corruption. Adegbile and Sarpong (2018) also names a few approaches to tackle these challenges: Companies should develop a deep knowledge of the local culture and market, establish a local R&D center focusing on local opportunities, and obtain local political support. Collaborating with other companies that know the market or NGOs is also named as an opportunity to gain in-depth knowledge of the local consumers.

Agarwal and Brem (2012) research the product development approach of the German MNC Siemens in the emerging markets China and India. Here, Siemens introduced their SMART product portfolio, with SMART standing for simple, maintenance friendly, affordable, reliable, and timely to market. Two success factors for Siemens in these countries were the identification of customers' core values, and end to end localization including local R&D centers. Both Siemens and General Electric are named as companies that successfully engage in frugal and reverse innovation. (Agarwal and Brem, 2012)

Anderson and Billou (2007) create a framework for MNCs that answers to the challenges of serving the BoP in emerging markets. The framework consists of the 4A's: availability, affordability, acceptability and awareness. Firstly, ensuring that a product is available for potential customers in these markets is challenging due to fragmented or non-existing distribution channels. Hindustan Lever, the Indian subsidiary of Unilever uses auto rickshaws, bullock-carts and canoes to make sure their products reach isolated BoP consumers. Unilever anticipates that the developing world will contribute to a large part of their overall turnover in the near future. Secondly, products for the BoP must be affordable and also match the cashflow of individuals that receive their salary on a daily rather than a weekly or monthly basis. Thirdly, acceptability implies that the products should answer to the specific needs of the consumers and the distributors. Hindustan Lever created Breeze 2-in-1, an affordable general-purpose soap with additional ingredients for healthy hair. This addressed consumers that perceived cheap shampoo as bad for hair and therefore used to use the same bar of soap for washing body and hair. Finally, companies should create awareness for their products, which can be difficult in emerging and developing markets, due to the absence of conventional advertising media. A successful marketing strategy of Hindustan lever was to engage street performers to promote their products, with adapted scripts for different dialects, education levels, and religions. (Anderson and Billou, 2007)

Ervits (2018) compares MNCs from developed and emerging markets and how they manage their R&D activities using a literature review and patent statistics. The author notes that DMNCs locate their R&D facilities in emerging markets, like China, to locally source new ideas.

Hoshino (2023) describes the strategies used by Japanese companies to enter into developing countries in Africa. The first example named by Hoshino (2023) is Sumitomo Chemical Co., Ltd.. This chemical company developed a mosquito net based on an insect repelling factory window screening. The net was later sold locally to consumers at an affordable price. Another company, Nisshin Food Co., Ltd. engaged in a joint venture with a local university in Kenya to develop instant ramen with local ingredients and flavors and additional nutrients for the local market. Grameen Danone Foods, Ltd., a joint venture of the Bangladeshi company Grameen Group and the french Danone group, is a social enterprise and produces a yogurt with protein, vitamins, zinc and other multi-nutrients for the Bangladeshi market. In urban areas, the product is sold at supermarkets, while in rural areas, local women are employed to sell the yogurt at a slightly lower price than in urban areas. Another strategy mentioned by Hoshino (2023) is selling products in smaller portions and at lower prices, so that the product becomes accessible also for less affluent consumers. This way also consumers with a lower income can be turned into regular customers. Hoshino (2023) names Hindustan Unilever, selling shampoo and detergent in one-time use portions in India, as an example. Finally, Hoshino (2023) also underlines that partnerships with NGOs and international organizations can provide the new entrant with intangible benefits such as local experience and expertise, access to local communities and good

relationships with local governments.

Jha and Krishnan (2013) discuss innovation activities of MNCs in India with executives of a dutch healthcare technology company, a business software company, and an American multinational conglomerate.

Using South Africa as a case study, Lappeman et al. (2019) describes how BoP consumer profiles differ and a global BoP consumer profile is thus unsuitable. The authors emphasize that it is essential to understand the consumer needs and their behaviors in order to develop viable strategies in these markets.

Leavy (2014) describes that the usual strategy of MNCs expanding into India is to first target the top of the pyramid with already existing products that are also offered in developed countries. With this, the commitment to India as a market is still low and the same global strategy is adopted. However due to the limited size of the market, companies soon enter a frustration zone of stagnating growth. This "midway trap" is characterized by a lack of investment and a lack of an India-specific business system. When corporations then increase their commitment and invest more to develop localized products and services they can again increase their growth and become market leaders. However as Leavy (2014) explains, many companies are caught in the "midway trap" and do not gain access to the largest portions of the population. GE's strategy to overcome the "midway trap" aims at becoming 'local'. The company developed an affordable handheld ECG machine for the Indian market which ultimately became a sought after product in the US as well and can therefore be categorized as a reverse innovation. Leavy (2014)

Due to the low purchasing power of consumers in emerging markets, products for these markets need to be adapted to ensure affordability. However for globally operating corporations, product standardization is a necessity. Liu (2019) describes how the balance between standardization and adaptation can be achieved through new product development strategies.

London and Hart (2004) research in an exploratory analysis how MNCs successfully enter low-income markets. They subdivide the strategies into three categories: Collaborating with non-traditional partners, co-inventing custom solutions, and building local capacity. Collaborating with non-traditional partners includes initiating relationships with non-profit organizations and local partners. Co-inventing custom solutions emphasizes the need for customer co-creation and enhances functionality. Building local capacity includes realizing the advantages of local institutions and the training of local entrepreneurs. The Indian subsidiary of Unilever, Hindustan Lever Limited is named as an example for a successful MNC at the BoP. The company used many different local partners to distribute their products and made an effort to understand the local consumer preferences and trained local entrepreneurs. Among the challenges mentioned by London and Hart (2004) is that NGOs might push back efforts of MNCs to expand into emerging and developing markets and that claims of corporate imperialism might harm the image of the MNC.

Lopez-Vega and Tell (2021) researches technology strategies that are adopted by the Brazilian subsidiaries of Swedish MNCs. Lopez-Vega and Tell (2021) distinguish between four different strategies. Firstly, the technical strategy is adopted by Alfa Laval and SKF and aims to adapt and develop products that are suitable for the local market conditions. Secondly, the improvement strategy is adopted by Dynapac and aims to support the MNC with product development activities through the design, devel-

opment, and production of new equipment. Thirdly, the development strategy is adopted by Electrolux and Tetra Pak and is an approach to develop entirely new innovations in a specialized technology field. Finally, the creation strategy, which is adopted by Scania and Ericsson, aims to develop a wide range of products for local and global markets. Whereas the final two strategies have a global and a local orientation, the second strategy has a global orientation. Only the first strategy has a purely local orientation.

Ma et al. (2019) explores the role of host country headquarters (HCHQ) as an integral part of the implementation of MNCs' strategies in emerging markets. HCHQs can improve the local responsiveness capabilities.

Mortazavi et al. (2019) develop a framework for MNCs to integrate ININ and overcome challenges in developing markets. The challenges are identified through a literature review.

Neuland and Hough (2010) research the operations of twelve MNCs in Sub-Saharan countries and determine a total of eight Key Success Factors (KSF) consisting of six strategic and two operational success factors. The first strategic KSF is "Choosing the appropriate strategies and organizational architecture". Mainly those MNCs that are active in retail and beverage sectors adapted their products and pricing to the BoP market tier. The second strategic KSF the authors identified is "Making trade-offs in order to share benefits"; All companies were involved in social programs and community investments. Thirdly, the MNCs partnered with the local governments, communicating "clearly and frequently with all relevant levels of in-country government". The fourth KSF is "Bulking up for critical mass" which meant that the MNCs diversified their product lines, product functioning, packaging, distribution, and advertising to facilitate business expansion. The fifth KSF identified in the research is "investing ahead of demand". Failure to meet the rising demand as business activity increases may result in significant forgone profits. The final strategic KSF is the "Readiness to capture the opportunity at the BoP". All companies had successfully entered the BoP market with at least some of their products. The first operational KSF is the effective use of expatriates. The MNCs adopt a poly-centric and geocentric approach to staffing by utilizing highly skilled expatriates but also incorporating locals into their organization. The second operational KSF is the "Flawless execution of strategies and operations". This entails the effective use of expatriates and realizing decentralization leading to high flexibility, autonomy, and the circumvention of top-management overburdening. (Neuland and Hough, 2010)

Roppelt et al. (2021) research why MNCs implement frugal innovation in their operations and develop a five-step approach for frugal innovation in MNCs. The authors conclude that frugal innovation is suitable for MNCs to address infrastructure insufficiencies and name Siemens Healthineers as an example. The company perceives frugal innovation as a fitting approach to tackle challenges like the rise of the middle-class, cost pressures, and the need for low-cost and good-enough quality in emerging and developing markets. Siemens Healthineers focuses for example on ensuring the reliability of their products by creating products that are not dependent on a constant power supply. Their traditional innovation and frugal innovation teams are separated, however regular exchanges between the teams are perceived as important. Siemens Healthineers has strict cost-targets for which frugal innovation is a solution by providing affordable products that enable the gain of market share while being profitable at the same time. In the emerging markets in which Siemens Healthineers is active, the company tries to set up facilities and a local ecosystem to become future proof for the growth of these markets.

(Roppelt et al., 2021)

Saranga et al. (2018) describe the coevolution of domestic firms and Developed Market Multi-national Corporations (DMNCs) in the automotive industry in India and China. Successful DMNCs formed vertical partnerships with local sub-assembly suppliers and horizontal partnerships with local network orchestrators. A challenge for the DMNC entrants was understanding the local market needs and institutional dynamics, caused by their limited embeddedness in the local business eco-system. When entering these new markets, DMNC car manufacturers usually introduced existing or derived products. Due to the complexity of the products and the protection of their technologies, DMNCs encouraged their established suppliers to follow them into these novel markets. In India and China, the absence of liberal markets meant that joint ventures with local firms was inevitable. Most DMNC car manufacturers introduced completely knocked-down (CKD) or semi-knocked down (SKD) products, that were initially developed for developed countries. These products however faced relatively weak demand as they only targeted the small upper income segments in India. Only Hyundai introduced a small car to tap into India's general consumer base. (Saranga et al., 2018)

Seifzadeh et al. (2020) determine strategic actions that MNCs use in response to institutional forces in Iran. The research identifies conformity, configuration, informal networks, and developing new arrangements as categories of organizational measures in response to the challenges faced. Conformity entails the adaption to the institutional pressures, configuration means mitigating the harmful effects of the institutional forces, informal networks means using personal connections, and developing new arrangements entails "taking active steps to rearrange the existing settings". The MNCs objectives are gaining market share, increasing financial returns or continuing their operations in Iran. Those MNCs that perceived themselves as strong (those with larger global presence and more financial and physical assets) used informal networks when facing an institutional environment that restricted their access to local strategic resources. In less restrictive environments, these MNCs tended to "take the role of institutional entrepreneurs and to actively engage in the development and creation of new institutional arrangements within their environment". MNCs that perceived themselves as being weaker tended to conform and adapt in response to more institutional restrictiveness. When facing less institutional restrictiveness, these weaker MNCs tended to engage in new configurations of operation.

Sharmelly and Ray (2018) describe how Hyundai positioned itself in the Indian market. Hyundai developed the Eon, a small car with a lower purchasing price and a reduced total cost of ownership, targeting the Indian middle class. The company constructed local R&D and design facilities to develop products specifically for the Indian market. Hyundai also developed strong collaborative relationships with local suppliers, attracted local talent and offered products tailored to the local needs of the market. Sharmelly and Ray (2018) conclude that frugal innovation is prerequisite when aiming for the development of successful product innovations for emerging markets. According to the authors, this is enabled through frugal engineering, bricolage and modular-design-scale capabilities. Apart from that, firms should create a collaborative ecosystem with local partners through social embeddedness.

Stevens and Newenham-Kahindi (2020) research determines the strategies developed by foreign MNCs to manage corruption in east and central-Africa. The author divides between avoidance and acquiescence strategies, and the engagement strategy. The acquiescence strategy involves accepting that bribes need to be paid in order to keep the business running. Avoidance can be achieved through

non-entry. A MNC from the US remarks that they choose to invest in Rwanda instead of other more corrupt countries in that region to dodge corruption. Partnering is also used as an avoidance strategy. In this case foreign MNCs will partner with local firms to forego the necessity of bribing or engaging in corruption to come to agreements. According to a US firm operating in Kenya, this however leads to other challenges since it is not known whether the partnering company is part of corrupt activities itself. Engagement strategies consist of forming multi-firm partnerships or making more long-run investments while accepting higher short-term costs. A bio-fuel MNC from Japan operating in the Democratic Republic of Congo applies such an engagement strategy by using local resources and sharing knowledge with locals, thus contributing positively to the local community. This positive contribution supposedly leads to government officials respecting the investment undertakings and not demanding bribes from the company.

Zeneli et al. (2018) delves into the challenges of terrorism and underlines that especially emerging markets are negatively affected by this, since businesses and citizens in these regions have more difficulty protecting themselves. The downside of the measures countering these threats of terrorism are however also not beneficial for global commerce since they mainly focus on border-crossing and thus restrict international transactions. Zeneli et al. (2018) underlines that companies that consider the threat of terrorism in their strategic planning, enhance their competitive advantage by doing so.

5.2 Results from the Case Companies

5.2.1 Healthcare Technology

The results in this section address the activities of a dutch multinational healthcare technology corporation in emerging and developing markets. The results are comprised from a presentation and an article of a former employee, as well as an interview with a current employee of the company.

Presentation and Article

A presentation given by a former employee of the company for the minor "Frugal Innovation for sustainable global development" at TU Delft provided insights into the companies' activities in Africa:

In 2014, the company introduced the Africa Innovation Hub as part of their R&D strategy for East Africa. This aimed at creating locally relevant innovations aligned with the third Sustainable Development Goal (SDG): "Ensure healthy lives and promote well-being for all at all ages." Here, several medical devices for low resource settings were developed, including an automated respiratory rate monitor to diagnose pneumonia in children and a wind-up fetal Doppler device for detecting complications during childbirth. The wind-up fetal Doppler device was briefly commercially available, and the automated respiratory rate monitor is commercially available still today. The biggest project was the development of community life centers, a community driven and integrated approach to strengthening primary healthcare by bundling technologies like solar power, healthcare, lighting, and information technologies with services. In the beginning, funding for these projects was guaranteed by executives of the corporation, however executives changed and funding was thus not guaranteed in the long run. The company also worked together with NGOs, like UNICEF, who bought ten-thousand

respiratory monitor devices. In the beginning, the trust of NGOs in these projects was low, but within the company, these projects were valued. However, after a couple of years, stakeholders from within the company wanted to see profit from these projects while the NGOs had begun to trust their good incentives. Another challenge consists of the fact that big corporations are static, bureaucratic, and that it takes a long time to get frugal innovations of the ground. Apart from that, there is a time constraint because the company wants to see profit at some point. A solution that was mentioned at this point is the transfer of the product as a spin-off project with a subsidiary company. The following challenges persisted: The wind-up fetal Doppler device turned out to still be too expensive, upper management had to consider these types of projects to be important, and these projects made up only a very small portion of the companies' revenue. A final challenge is that the management considers the opportunity costs of these projects as being too high.

These points are further elaborated in an article by Geradts et al. (2019), that explains why corporations fail in developing innovations with both financial and societal payoffs. The article names three barriers for corporate social innovators. Firstly, it is difficult to balance social and financial objectives. Secondly, the corporate social innovators face a double edged sword of legitimacy. Inside the organizations, corporate social innovators are considered to follow philanthropic goals instead of business goals, whereas externally, they are considered to be motivated solely by profit. Finally, corporate social innovation does not have a dedicated place, with their own resources and goals, within the corporation. Next, the article discusses ways to overcome these challenges. Firstly, management involvement is essential for support and trust from within the organization. Secondly, partnerships with NGOs are needed to gain external legitimacy and facilitate local know-how as well as co-investment. Finally, there must be strategic alignment, room for experimentation, and tailored performance metrics.

Interview

The interviewee worked in the "access to care" team, which is the continuation of the Africa Innovation Hub and part of the sustainability team focusing on the third Sustainable Development Goal (SDG). The access to care team focuses on how healthcare can be made more accessible via partnership business models and innovations. Currently, the interviewee is in the global government and public affairs team and is responsible for leading global partnerships with government related organizations. The company collaborates with UN organizations, trade associations and other NGOs. The central team is situated in the Netherlands, and local teams are situated in key countries in emerging and developing regions.

- *"As a company, we have the central team in the Netherlands, but then we work together, of course with teams also in those lower middle income countries."*

Access to care works specifically with the regions of Latin America, Africa and APEC (Asia-Pacific). In Kenya for instance, all activities, including those in high end hospitals, fall under the access to care team. Some specific populations in higher income countries such as those in remote areas also fall under the access to care team.

An example of an access to care project is the digital connected care coalition (DCCC) for which

multiple organizations, companies, and NGOs teamed up on digital health in emerging and developing markets.

- *"And their focus was mainly on Kenya, Rwanda, and India. And how can we team up with other partners to actually set up projects and systems, because we cannot do it [...] on our own. We really need partners and sometimes it's ecosystem partners with community healthcare workers on the ground that know how to use, for example, new innovations or that can help with the implementation and teaching. Sometimes you need to team up with governments to have the right legislative environment to also make sure that you can scale certain innovations. So as a global innovation company, we really believe in partnerships."*

Another project aimed at determining ways to measure the progress of the companies' goal of improving the lives of 400 million people in underserved communities.

In the community life centers, a handheld ultrasound probe was used, to which a tablet or smartphone could be connected which then would serve as a screen. The device can be used in remote areas and the company is working together with the Bill and Melinda Gates Foundation on a new AI algorithm for the probe.

To expand into emerging and developing regions, the company looks at countries where scaling is possible and that are a bit more developed. In these countries, the projects' concepts can be proven and then these projects can be scaled further in less developed countries in that region. The company is already active in the high end hospitals in many countries in emerging and developing markets. The interviewee also notes that it is important to have already a foot on the ground in order to understand the country and the market and to be able to enter the markets early.

- *"I think we first of all do look at countries where we think we can scale so that's for example, I know Kenya is one of the popular examples of it, but it's a country that's already a bit more developed. But if you can get an innovation implemented in the country and you can scale it then you can also further scale it to other, maybe less developed countries in Africa. So that is also a bit the strategy, we kind of choose countries where we know that already a certain level of development is happening because otherwise we know that on the long term it might be difficult to scale and we first need to kind of have a proof of concept. That's, for example, why India is another big market. And of course, these are indeed emerging markets. So we also really look at [...] countries that we know that in the next coming ten, twenty to thirty years, that the population will grow. They will develop economically, so that also means that next to the maybe starting segment that we are active in now, also the higher segments of care will become bigger. And it's important, of course, to already have kind of like a foot on the ground now and understand the country and the markets. So you can also enter the markets early. That's absolutely something that is taken into account when we choose a country. Same for Indonesia, for example. Indonesia is another focus country because we do see opportunities there also for the future."*

To cater different customer segments, the company offers different levels of MRI and CT scanners of which some can be placed on a truck to reach remote areas. Apart from that, the company offers a refurbished portfolio.

- *"We have different levels of an MRI scanners. So you have the highest advanced Tesla ones and you have the lower Tesla MRI scanners. We now also have helium free MRI scanner, so they only have a closed magnet. They don't need to get helium pumped into it the whole time to cool the magnets. Which for example helps in the weight, it's less heavy. And therefore you can for example place the MRI scanner also in a truck. [...] So you can actually move it around and go through different areas to scan people. Same is done for CT. So we have certain solutions in a truck in areas where we want to reach people also in more remote places."*
- *"And then we do have the, we call it, value segment. So indeed, the bit lesser expensive ones, we have a full refurbished portfolio. It's also something we often try to sell because it has the same quality, it has the same warranties, the same maintenance and training, and everything we give around it, but it is refurbished."*

The company also uses leasing models to make products more accessible and works together with UN agencies and the World Bank that gives loans to governments:

- *"Then we kind of like team up with the World Bank and with the government and together kind of Chip in."*

The challenges the company faces are political instability, geopolitical risk, national government risk and inadequate electricity and infrastructure.

- *"Some of the countries are politically also less stable. [...] I think taking the geopolitical risks, but also just like the national government risks into account, we need the government in the end to also scale certain solutions or to implement it on a broader scale and to support it, and we often face issues there. Of course, in really lower developed countries you have the basic issues like electricity or infrastructure."*

Emerging and developing markets often do not want the refurbished products since they consider them inferior to new products.

- *"We often also see that low and middle income countries don't want to get refurbished (products) because they still have the feeling that they get less good stuff. While its actually as good as new, so that's a challenge we sometimes see, because it's a certain perspective [...] so that's sometimes like a stigma we [...] need to work around."*

These markets are also smaller, so that scaling can be difficult.

- *"Well, I think it's indeed scaling. I think it's often difficult to scale because the market is smaller."*

Another challenge is the price point; While competitors from China are less expensive, the company focuses on offering more long term value through maintenance. Finding a suitable business model is challenging as was also the case with the community life centers. That project had been halted because it was not picked up or scaled and the company was not able to turn it into a financially sustainable business model. Furthermore, working indirectly can be challenging:

- *"We also are not working directly in all those countries in the lower and middle income countries. We do have offices all around the world, but sometimes we work with distributors or with partners [...]. And I think it helps if you have your own office because you're closer to the customer, to the hospital or to the healthcare setting and you can better also see how things are going. I think sometimes it's also challenge because we need to work indirect."*

The interviewee mentioned that the company sees also some short term opportunities in Indonesia and India, and emphasizes that short term gains are also important for maintaining business operations.

- *"Indonesia and India are countries that we also want to focus on more, also indeed with the long term perspectives in mind, but also because we already see some short term opportunities there as well, because we cannot only do it all for the long term, because it kind of needs to work at the moment as well to keep people involved."*

The company also produces in emerging markets and has factories in South America and China. Many countries want companies to produce locally to boost their economy but that is not always possible with complicated medical technology. In Bangalore, India, the company has a R&D center because there is an innovation hub and a lot of know-how:

- *"there are the right people to attract, to work for you."*

The interviewee also elaborated that the company is trying to understand what global organizations are focusing on:

- *"And that is for us an opportunity to also team up a bit with the governments and with those international financing organizations like how can we with our solutions also help to make the health systems more climate resilient. For example, buying an MRI scanner which is helium free is more sustainable, but it's also more climate resilient than an MRI scanner with helium."*

Finally, the company also has a foundation, which is a separate entity also working on access to care and some innovations that were not commercially sustainable are handed over to the foundation.

5.2.2 Fast Moving Consumer Goods

The British Fast Moving Consumer Goods (FMCG) multinational is active in around 200 countries and has the following business units: health and well-being, home care, personal care, foods and ice cream. For every country, a team with representatives of all these business units decides, based on the local situation, which products to launch or improve every year in that country. To make that decision, the consumers preferences are considered as well as their needs and their budget.

- *"But we really see what works locally. Which of the products would land there? Again, related to [...] what the consumers want, what their needs are and what they can offer (what they can pay)."*

Not every country the company is active in has a separate team, since sometimes a team represents a cluster of countries. Next to the countries in which the company is already well established, there is a strong focus on emerging and developing countries that are economically growing and that have populations with an increasing disposable income.

- *"We constantly keep track on the economic development in these countries and for instance, Philippines is doing quite well at the moment. So more effort is put into the Philippines and the people have more to spend and it keeps on increasing. And so for that reason we spend more effort in exploring that market."*
- *"If a consumer can spend more, then a whole range of other products can be offered, and if they cannot spend a lot, then it is only for the bottom of the pyramid type of products. Detergents you can buy in a big pot, but also in little sachets, for instance, and I maybe have places where normal detergents cannot be sold, only soap bars or something like that. But yeah, if they have more to spend, you can offer bigger jars or packs with detergent."*

In the past people from Europe used to work for the company in these countries, however nowadays it is mostly local people, who know these markets better.

- *"Nowadays we have local people working for the company, they know the market also better. That used to be people from Europe that were working there."*

The company mainly sells premium brands and targets therefore mostly middle and upper class consumers in urban areas. There are however also products targeting the BoP. In Nigeria, the company sold iron fortified bouillon cubes, a project that was also supported by the Bill and Melinda Gates foundation.

- *"And there are of course products that are not really of interest here in the Western world, but are for instance very much in Africa. An example of that are, for instance, iron fortified bouillon cubes. There is quite an iron dis-sufficiency and for instance in Nigeria we have quite a market share in iron fortified bouillon cubes."*

To cater less affluent consumer groups, detergents are packed into small single serve sachets, while more affluent consumers are offered bigger pots. Soap bars that do not contain the most expensive ingredients but that have a reasonable cleaning performance are also available to the BoP.

- *"When you take Uganda for instance, we do have [...] our top brand detergent but also [...] a simpler formulation where the most expensive ingredients are left out, but still it has a reasonable cleaning performance which is then more for the bottom end of the market."*

Another product example was a soap bar with a campaign in India to communicate the benefits of washing hands. Next to promoting the product, it aimed at educating people about the health benefits of regularly washing hands. The company sells many products in powder form which have to be prepared using drinking water. One of these is a drink for children containing proteins and other

nutrients so that it can be used for breakfast. However many consumers do not have access to drinkable water. This led to the introduction of water purification devices in India. In South Africa, the company launched a meat extender product made of textured vegetable protein. Using this, consumers could essentially eat more meat, for a lower price. The product is nowadays also available in developed countries, making it a potential case of reverse innovation.

- *"And actually that (meat extender) is something that started in a, let's say, emerging country. Meat is expensive and then to add this cheap ingredient, you double your meat and that is now coming back here to the Netherlands in the Lidl and the Jumbo I believe they've got these hybrid offerings now. That's an example of something in an emerging market that came to to our countries."*

Another product developed by the company was a simplified version of a washing machine for the BoP. This product was not continued since the company did not have enough expertise with the marketing of devices. The product was however further marketed outside the company under a different brand.

Challenges the company faces in emerging and developing markets are infrastructure deficiencies, and import challenges such as taxes.

- *"The whole supply chain becomes very cumbersome if you have to go in rural areas."*
- *"If you are in Kenya or in Nigeria for instance, it is very difficult to import. So there are a lot of import challenges and taxes."*
- *"We also once had to ship something from Kenya to Nigeria. It was double trouble. It took eight months. Normally it is one week."*

These sometimes lead to long transport durations or lower margins and they can lead to a worse competitive position. Therefore it can sometimes be beneficial to have a factory locally. Packaging products in smaller serving sizes to cater less affluent consumers can also reduce the margins because the packaging itself is quite expensive.

- *"So who is going to bring these products to the consumers in these small villages? These products are already on very low margin. And the turnovers are also relatively small and the packaging is mostly expensive because it's mostly lower volumes you sell as well. So that all makes that your margin is lower."*

All in all it is a challenge to deliver products that go well with consumers at the right price point.

- *"The biggest challenges are can you deliver a product that works well with the consumers? Can you deliver it at the right price point?"*

Entering markets with local products, like soy sauce in china, can also be difficult since the market is already saturated with local brands. Some products aim at merging local foods with western products, like a western ice-cream brand that was introduced in China and which contained green tea and sweet brown beans.

Furthermore, a challenge for the company is their diverse business and their extensive product portfolio.

- *"I think what it makes challenging to speak in, let's say more general terms, is that we have so many different products. We have five categories and then hundreds, thousands of different products and for every product there's different dynamics."*

Finally, due to climate change, crop yields are going down and ingredient prices are inflated. To mitigate this, the company has for instance a project where it teaches rice farmers techniques to get increased crop yields.

5.2.3 Consumer Electronics

The household appliances company is owned by a private equity firm and aims to double its sales through three major strategies: Firstly through their existing products, secondly through new product propositions in areas the company is not yet present in, and thirdly through entering new countries and fast growing countries.

- *"We are owned by a private equity who will at a certain point in time want to see their money back so we need to increase the value of our company and typically you do that by showing growth."*
- *"We want to double our sales and there are three ways (in which) we try to do that. First is with existing products which are growing very fast because they not yet have what we call the household penetration, so the number of households who have that product in their home is not yet that big, for example espresso machines and air fryers, those are two very hot categories at the moment, so we build on product categories that we already have. The second area is where we develop new propositions, so where we're not yet present. So we re-entered into robotic vacuum cleaners, we recently released what we call pet feeding, so water fountains and automatic feeders for pets at home. We introduce security cameras in India so that's the second pillar, so new propositions. And the third one is new countries or fast growing countries and then we typically talk (about) China, India, Indonesia many of them being developing countries."*

The company tries to build as much on global product platforms as possible, however local relevance must also be achieved since customer preferences differ. As an example, the popularity of rice cookers in Asia is mentioned. Apart from that, different voltages in regions lead to varying product specifications.

- *"You want to have the global leverage and the local relevance, so we try as much as we can to build on global products and global platforms to make sure we have the scale, but on the other hand you need to be locally relevant and sometimes that is just by voltage defined in the equipment so yeah different countries, different voltage, different plugs."*

Both in Brazil and India, the company owns a local brand that was acquired in the past. The main brand of the company is described by the interviewee as a mainstream brand that is neither high nor low end. For emerging and developing markets, product specifications are adapted to local requirements. Since the company is renowned for quality and it wants to maintain this image, it cannot reduce cost by reducing quality. It does therefore rather reduce the product specifications and features to achieve a lower price point for consumers.

- *"In general, we don't like to adjust quality, but it's more about specifications. Having a lower specified product which maybe lasts less long. For me quality is meeting specifications and every product should have good quality, because if you don't meet specifications you will destroy any brand."*
- *"But it is more that with certain (cheaper) price points you go to specifications which may not fit the (company's) brand [...]"*

Apart from that, in emerging and developing markets, recycled plastic might not be used in favor of cheaper virgin material, also because sustainability is less of a topic:

- *"Although we don't want to compromise on sustainability, but that's less of a topic in those countries, so you may not use recycled plastic, but you use more cheaper virgin material."*

The user interfaces might be designed differently as well:

- *"instead of doing a digital user interface or even have a connected product like we have in some cases you make more use of switches and dials and you rethink materials."*

To expand in emerging and developing markets, the company focuses on a few products and makes them big, since bringing many products to market will lead to diversification which increases cost and complexity. New markets are identified by looking at market size and market growth:

- *"We look to market size. So indeed India, China, are very fast growing, but also Indonesia in terms of population, the 4th country in the world."*

These countries are interesting both as markets to sell but also as potential markets to produce. The company is producing currently already in China, India and Indonesia. China is currently the cheapest option due to the well developed infrastructure and industrial ecosystem. However if countries raise their import tariffs, it might become more sensible to produce locally:

- *"If you look at India, they are getting more and more strict on certification of products, which almost makes it impossible to import goods from China. [...] Indonesia is also putting up import quota, to basically develop their local economy and the local industry and that also forces us to be much more locally present with our own development and manufacturing and supply chain."*

The company does its research and platforming in Europe, while the product execution is done locally to save on costs. A benefit of being locally present is that *"you can do things faster"*.

Current challenges the company faces are next to the import tariffs the costs of good employees and finding the right talent:

- *"A good engineer in china is as expensive as in the Netherlands."*
- *"Finding the right talent may be a challenge in some countries and other companies might be looking for the same talent."*

The company currently employs mostly a single brand strategy. Adding a separate local brand to target a lower-end market is difficult, expensive, and building a renowned brand takes time.

- *"And building a brand with all the expertise and promotions, specifically in the consumer area is quite a costly exercise. So that's why so far we did not do it. So the local brands that we have were based upon acquisition with the portfolio that they had at that time and we don't have specific local brands in the emerging market to address that part."*

According to the interviewee, the advantage of a global brand is the global scale as compared to many local competitors, especially in China:

- *"So I think the global versus local strategy is also an interesting perspective to look at this topic."*

5.2.4 Furniture and Home Accessories

Usually, the furniture retail company enters markets first with a physical store and follows up with e-commerce, however in the case of India, the company launched the digital store first. This was done due to the technologically competent ("tech savvy") target customer segment. This approach worked well and twenty percent of the company's revenue in India is achieved through online customers comparing to an industry average of eleven percent (Thaker, 2024). In 2018 the company entered India with a physical store in Hyderabad followed by a second store in 2020 in Mumbai (Mandaliya, 2023). The target group is the Indian middle class (Mandaliya, 2023), young millennials that have just started a career but are not yet rich (Dutta, 2022). India is a top priority, and the retailer aims to serve 200 million people in India by 2025 (Bureau, 2024). The country is especially considered due to the long term potential (Thaker, 2024).

The Indian consumer however is hard to understand (Dutta, 2022), and awareness that furnishing a home adds value to your life is still missing (Thaker, 2024). The company has a global approach to most product-designs but in India for instance, people require more storage space around their bed, thus they have to adapt their product offerings (Thaker, 2024).

Apart from that, India is the country with the lowest per capita income in which the company is present, and in Europe they often are the cheapest option, whereas in India many local players are far more affordable (Dutta, 2022). Until now, the company has not yet made profits in India, which is also due to the large-scale investments in the Indian market (Bureau, 2024).

Further challenges faced by the company are a high tax rate on furniture and the relative high cost of producing locally. Suitable raw materials are more scarce and more expensive than in China, and infrastructure is bad while transportation costs are relatively high. The cost of labor is lower than in China, but the Indian workers have a lower skill level as compared to Chinese workers. Mainly these factors lead to locally manufactured furniture not being cost competitive with imported furniture. (IKEA, 2021)

5.3 Challenges Conclusion

In the literature many different challenges faced by companies in emerging and developing markets are mentioned. In this section, the challenges that came forward from the case companies are linked

to those from the literature and the most prevalent are highlighted. Apart from that, the challenges are differentiated between business and operational challenges.

Institutional voids refer to a complete absence or severe inadequacy of formal institutions. Ma et al. (2019) name underdeveloped institutional environments as a challenge, and Neuland and Hough (2010) and Sharmelly and Ray (2018) name institutional voids as a challenge. However, many other challenges named by literature sources can be included to the category of institutional voids as well. These include corruption (Adegbile and Sarpong, 2018) (Leavy, 2014) (Neuland and Hough, 2010) (Stevens and Newenham-Kahindi, 2020), a lack of patent protection (Adegbile and Sarpong, 2018) (Mortazavi et al., 2019) (Saranga et al., 2018), regulation and legislation challenges (Hoshino, 2023), the domination of social institutions (London and Hart, 2004) (and thus the subordination of formal institutions), inefficient bureaucracy (Mortazavi et al., 2019), and further challenges named by (Seifzadeh et al., 2020). Adegbile and Sarpong (2018) also names infrastructure deficiencies and low purchasing power as institutional challenges. These are here however separately listed since many other sources also name them as challenges. Institutional voids constitute both operational and business challenges since it does not only complicated the operations of a company but the company also needs to make strategic adjustments to compensate for these challenges.

The second most named challenge are infrastructure deficiencies (Adegbile and Sarpong, 2018) (Anderson and Billou, 2007) (Hoshino, 2023) (Jha and Krishnan, 2013) (Leavy, 2014) (Mortazavi et al., 2019) (Neuland and Hough, 2010). In the interview with the healthcare technology company, inadequate electricity and infrastructure is mentioned and for the FMCG corporation and the furniture retailer infrastructure deficiencies are also perceived as a challenge (IKEA, 2021). Infrastructure deficiencies are also closely related to the challenge of ensuring the availability of products and services (Adegbile and Sarpong, 2018). The article by Anderson and Billou (2007) describes how Hindustan Lever is using local means of transport, such as canoes and bullock-carts to make sure that their products are available to BoP consumers in isolated areas. Infrastructure deficiencies pose an operational challenge for MNCs.

In the literature, the low purchasing power of consumers in emerging and developing markets is also widely regarded as a challenge (Adegbile and Sarpong, 2018) (Anderson and Billou, 2007) (Liu, 2019) (Mortazavi et al., 2019). Apart from that, three out of the four case companies regard this as a challenge as well. This challenge is purely a business challenge since it affects the pricing models of the business.

In the literature, political instability is named as another challenge that companies face when operating in emerging and developing markets (Adegbile and Sarpong, 2018) (Hoshino, 2023) (Mortazavi et al., 2019) (Sharmelly and Ray, 2018). To this category, also the challenges "religious and racial conflicts" (Neuland and Hough, 2010) and "terrorism" (Zeneli et al., 2018) are added. Political instability is also mentioned by the interviewee from the healthcare technology company, who emphasizes that the company faces challenges concerning political instability, geopolitical risk, and national government risk in emerging and developing markets. This challenge is however not named by the other interviewees. The reason for this could be that the furniture retailer and the household appliances firm do not operate in countries that are deemed unstable. The country with the lowest per capita income in which the furniture retailer operates is India, which is politically and economically a stable country.

The household appliances firm mainly operates in rising economies, including India and Indonesia, and therefore might also not face this challenge. The FMCG firm operates almost in every country and therefore also in countries that are politically and economically unstable. However this was still not mentioned as a challenge in the interview. Healthcare technology is expensive and is often (partly) paid for by governments. The other three companies are selling directly to individual consumers. The dependence of sales on public spending for the healthcare technology company might explain why for them political and economical instability is a bigger issue. Political instability is mainly a business challenge since companies have to include many uncertainties in their strategy, however it also has operational implications, since sudden political changes can lead to disruptions of the business operations.

Companies that use emerging and developing markets not just to sell their products but also to source their products often face difficulty in finding the right talent (Mortazavi et al., 2019) (Neuland and Hough, 2010) (Sharmelly and Ray, 2018). Also Hoshino (2023) names "hiring and workforce problems" as a challenge. The interviewee of the household appliances firm mentions that talented engineers in emerging markets like China can be as expensive as in developed countries, and are sought after by other companies as well. The furniture retailer also has difficulties in finding the right talent to produce in India, since Indian workers are less skilled than those in China, where the company is already producing (IKEA, 2021). These workforce challenges can be categorized both as a business and an operational challenge.

Next to Hoshino (2023), three out of the four case companies mention import taxes and trade regulation as a challenge. This is faced by the FMCG corporation, the household appliances company, and the furniture retailer (IKEA, 2021). In the interview with the healthcare technology company, the interviewee mentions that countries want companies to produce locally to boost their economy. For the healthcare technology company this is however often not an option due to the complexity of their devices. The FMCG interviewee and the household appliances interviewee mention both that it is sometimes beneficial to have a factory locally due to import tariffs, but that it often reduces the profit margins. Trade regulation is can also be categorized both as a business and an operational challenge. On the operational side, it can lead to supply chain delays and on the business side, high taxes can affect pricing strategies and manufacturing decisions.

Adegbile and Sarpong (2018) highlights the difficulty of balancing cost structure, quality, sustainability and profitability. This is further complicated by the fact that consumers in emerging and developing markets prefer affordable but high quality products (Adegbile and Sarpong, 2018), (Chea, 2021). In the interview with the household appliances company, the interviewee describes that the company can adjust their products to local needs and make it slightly cheaper, but that they cannot reduce the quality too much, since that would damage their brand. The interviewee also describes that even though the company prefers not to reduce the ecological sustainability of their products, they sometimes use cheaper virgin material instead of recycled plastic in emerging and developing markets. The article by Geradts et al. (2019) also underlines the difficulty of balancing social and financial objectives. This again is in line with the literature by Santos et al. (2020) and Wohlfart et al. (2016), who consider corporate strategies focusing on social benefits rather than just economic benefits as a more difficult strategy.

The value conscious nature of BoP consumers (Adebile and Sarpong, 2018) and the unsuitability of a one-size-fits-all consumer profile (Lappeman et al., 2019) are both categorized under consumer complexity in table 5.1. Consumer complexity is purely a business challenge, and overlaps to some extent with the low purchasing power of consumers.

The household appliances company tries to build as much on global product platforms as possible, while still trying to achieve local relevance. This is described as a challenge in the literature by Liu (2019), who discusses the difficulties of achieving a standardization - adaptation balance. Deciding whether to standardize products globally or adapting them to local tastes is a strategic decision that influences costs, branding, and competitive advantage and is thus a business challenge.

Anderson and Billou (2007) mention gaining acceptability for a product as a challenge. The healthcare technology company offers refurbished devices to consumers in emerging and developing markets but clients consider these to be inferior to new devices. For the furniture retailer acceptability is also a challenge in India, since Indian consumers are not yet aware of the added value furniture adds to personal life (Thaker, 2024). This is also purely a business challenge.

London and Hart (2004) outlines that push back from NGO's can be difficult for MNCs. Geradts et al. (2019) describe a similar experience in the context of corporate social innovators. In the article it is described as a double edged sword of legitimacy: From within the company social innovation efforts are suspected as being purely philanthropical, while from the outside the corporation is thought as purely motivated by profits. This lack of outside trust makes it often difficult to partner with public organizations. In the presentation about the efforts of the healthcare technology company in emerging and developing markets, it was described that these project were in the beginning supported from within the corporation, but NGOs were hesitant to collaborate. However, after a couple of years, when NGOs were convinced of the societal benefit of these projects, the projects lost their internal support due to their unprofitability. This is a business challenge since NGOs might force companies to alter their business practices.

Table 5.1 summarizes the challenges that result from the literature and the case companies, and label them as business or operational challenges. All challenges included in the table have multiple sources and are generalizable. Challenges that were named by only one source and case specific challenges are excluded.

Challenge	Sources	Cases
Institutional voids (business and operational)	Adebile and Sarpong (2018), Hoshino (2023), Leavy (2014), Ma et al. (2019), Mortazavi et al. (2019), Neuland and Hough (2010), Saranga et al. (2018), Seifzadeh et al. (2020), Sharmelly and Ray (2018), Stevens and Newenham-Kahindi (2020) (10)	

Continued on next page

Challenge	Sources	Cases
Infrastructure deficiencies (operational)	Adebile and Sarpong (2018), Anderson and Billou (2007), Hoshino (2023), Jha and Krishnan (2013), Leavy (2014), Mortazavi et al. (2019), Neuland and Hough (2010) (7)	Healthcare Technology, FMCG (2)
Low purchasing power (business)	Adebile and Sarpong (2018), Anderson and Billou (2007), Liu (2019), Mortazavi et al. (2019) (4)	Healthcare Technology, FMCG, Furniture (3)
Political Instability (business, indirectly operational)	Adebile and Sarpong (2018), Hoshino (2023), Mortazavi et al. (2019), Neuland and Hough (2010), Sharmelly and Ray (2018), Zeneli et al. (2018) (6)	Healthcare Technology (1)
Workforce challenges (business and operational)	Hoshino (2023), Mortazavi et al. (2019), Neuland and Hough (2010), Sharmelly and Ray (2018) (4)	Household Appliances, Furniture (2)
Trade regulation (business and operational)	Hoshino (2023) (1)	FMCG, Household Appliances, Furniture (3)
Consumer complexity (business)	Lappeman et al. (2019), Adebile and Sarpong (2018) (2)	Furniture (1)
Standardization adaptation balance (business)	Liu (2019) (1)	Household Appliances (1)
Gain acceptability for products (business)	Anderson and Billou (2007) (1)	Healthcare Technology, Furniture (2)
NGO push back (business)	London and Hart (2004) (1)	Healthcare Technology (1)

Table 5.1: Challenges summarized.

5.4 Strategies Conclusion

In this section, the strategies of MNCs in emerging and developing markets identified from the literature and the case companies are consolidated. Apart from that, an overview of the most prevalent strategies is provided.

Leavy (2014) describes how companies enter emerging and developing markets with products that they initially developed for their home markets. The authors emphasize the importance of then also addressing larger consumer groups in these markets so that the corporations do not get stuck in the midway trap. The healthcare technology company entered new emerging and developing markets with their existing product portfolio, targeting high end hospitals. Currently, the healthcare technology company has product lines in different pricing categories, offers refurbished devices, and has a leasing payment plan to make their products more accessible. Another example of how the healthcare

technology company ensures affordability for hospitals, is by selling scans per click Jha and Krishnan (2013). Apart from that, the healthcare technology company is focusing on co-creation and understanding customer needs (Jha and Krishnan, 2013). Customer co-creation is one of the major success-factors for frugal innovations mentioned by Wohlfart et al. (2021). Another way of reducing product prices and thus catering to a larger consumer group is by introducing semi knocked down (SKD) or completely knocked down (CKD) products (Saranga et al., 2018). The FMCG corporation offers detergents at different price levels and leave the most expensive ingredients out in the cheaper products. Apart from that, they sell bars of soap that are cheaper and target the BoP. The household appliances company also adapts their products to local consumer needs. The products' user interface is made simpler or, since in emerging markets sustainability is valued relatively less than in developed markets, products are produced from cheaper virgin material instead of recycled plastic. In the literature, the importance of identifying the core customer values and needs is pointed out (Agarwal and Brem, 2012), (Jha and Krishnan, 2013), (Roppelt et al., 2021), (London and Hart, 2004). The furniture retailer adapted their business model to digitally proficient Indian consumers by introducing the online store before the physical store. The FMCG corporation considers the consumers budget and answers to the consumers needs by introducing a water purification device in India. The company producing household appliances also adapts their products to local needs by reducing cost through using other raw materials. Furthermore, local R&D centers can also help in understanding the consumers better (Erviets, 2018). The healthcare technology company for instance has a R&D facility in Bangalore, India, due to the know-how that is available there. Finally, the midway trap can also be overcome by investing more in the local market (Leavy, 2014) and Neuland and Hough (2010) names bulking up for critical mass and investing ahead of demand as a strategy, which is what the furniture retailer is currently doing in India (Dutta, 2022).

Next to customer-co creation, companies can enter joint ventures and partnerships with universities, companies, and NGOs (Hoshino, 2023). The healthcare technology company is collaborating with NGOs and UN organizations as the company believes in partnerships. To develop a new AI algorithm for the handheld ultrasound probe, the healthcare technology company partnered with the Bill and Melinda Gates Foundation. The FMCG corporation also collaborated with the non-profit Bill and Melinda Gates Foundation for the development of iron-fortified bouillon cubes. Nisshin Food Co., Ltd. engaged in a joint venture with a local university in Kenya to develop instant ramen with local ingredients and flavors and additional nutrients for the local market Hoshino (2023). This collaboration with a non-traditional partner, namely the university, is a strategy also mentioned by London and Hart (2004). Furthermore, the instant ramen was adapted to local taste. The FMCG corporation did something similar by offering ice-cream with green tea flavor and sweet brown beans in China. The importance of local partnerships and ecosystems is also underlined by multiple scholars (Agarwal and Brem, 2012), (Sharmelly and Ray, 2018), (Neuland and Hough, 2010), (Roppelt et al., 2021), (London and Hart, 2004), (Leavy, 2014) and the interviewee from the healthcare technology company also emphasized the importance of being locally present. Ma et al. (2019) names in their research the importance of host country headquarters (HCHQ).

Another strategy identified in the literature is the introduction of products with increased effectiveness (Hoshino, 2023). The meat extender offered by the FMCG corporation in South-Africa can be

categorized as such. Another property of products offered by the FMCG corporation is that a product, like the iron-fortified bouillon cubes, serves multiple purposes. A similar product proposition was made by the Grameen Danone Foods, Ltd. joint venture in Bangladesh, when they produced a yogurt with protein, vitamins, zinc and other multi-nutrients (Hoshino, 2023). Another product property mentioned by Hoshino (2023) is selling products in smaller portions to make them more accessible to less affluent consumers. The interviewed FMCG corporation is doing this as well. Finally, as emphasized in the interview with the consumer electronics company, the quality of products must be consistent with the quality of the brand.

Neuland and Hough (2010) proposes MNCs to adopt a poly-centric and geocentric approach to staffing by utilizing highly skilled expatriates but also incorporating locals into their organization. While in the past the interviewed FMCG corporation had many expats from developed markets in emerging and developing markets, nowadays the company employs more local people that know the local markets better. Neuland and Hough (2010) also mentions engaging in social activities in emerging and developing markets as a strategy, which is what the healthcare technology company is doing through their foundation. Through this, the company can convince NGOs and outside public organizations of their social intentions, making these organizations less hesitant in forming partnerships with the MNC.

Concerning the healthcare technology company, a few final aspects, that have not been identified through the literature, are worth discussing. In the beginning of the innovation efforts of the company in Africa, funding for these projects was guaranteed by the executives. Executives however change leading potentially to the discontinuation of such projects. Making sure that social innovation has a dedicated place within the corporation's organization is a possible solution to this (Geradts et al., 2019). Innovation projects that were not able to thrive within the healthcare technology company and the FMCG company were placed in spin-off companies.

Table 5.2 summarizes the strategies as identified from the literature and the case companies. The most named strategy is localization. This strategy includes, next to the sources that named localization, "obtaining local political support" named by Adegbile and Sarpong (2018) and Neuland and Hough (2010), and the "introduction of local R&D centers" named by Adegbile and Sarpong (2018), Agarwal and Brem (2012), Ervits (2018), and Sharmelly and Ray (2018).

Localization will improve the companies understanding of the local market and their customers and ultimately identify customer core values. Understanding the market is further enhanced by collaborating with NGOs and other companies that are locally active.

This enables companies to further tailor their products and their pricing to the local market. The strategy "tailor products and pricing to local market" includes also the strategies "modular design", "SKD and CKD products", "added nutrients" and "spanning different price points".

Furthermore, the strategy "focus on market potential" includes also the strategy "making large investments" which Jha and Krishnan (2013) mentioned.

The strategies in the table are generalizable and those strategies that have been named by only one source are excluded.

Strategy	Sources	Cases
Localization	Adebile and Sarpong (2018), Agarwal and Brem (2012), Ervits (2018), Hoshino (2023), Jha and Krishnan (2013), Leavy (2014), London and Hart (2004), Ma et al. (2019), Neuland and Hough (2010), Roppelt et al. (2021), Sharmelly and Ray (2018) (11)	Healthcare Technology, FMCG, Household Appliances (3)
Tailor products and pricing to local market	Anderson and Billou (2007), Hoshino (2023), Jha and Krishnan (2013), Leavy (2014), Lopez-Vega and Tell (2021), Neuland and Hough (2010), Saranga et al. (2018), Sharmelly and Ray (2018) (8)	Healthcare Technology, FMCG, Household Appliances, Furniture (4)
Collaborate with other companies and NGOs	Adebile and Sarpong (2018), Hoshino (2023), London and Hart (2004), Saranga et al. (2018), Sharmelly and Ray (2018) (5)	Healthcare Technology, FMCG (2)
Identify customer core values	Agarwal and Brem (2012), Jha and Krishnan (2013), London and Hart (2004), Roppelt et al. (2021) (4)	
Understand local culture and market	Adebile and Sarpong (2018), Jha and Krishnan (2013) (2)	
focus on market potential	Jha and Krishnan (2013), Leavy (2014), Neuland and Hough (2010), Roppelt et al. (2021) (4)	Healthcare Technology, FMCG, Household Appliances, Furniture (4)
Frugal Innovation	Agarwal and Brem (2012), Roppelt et al. (2021), Sharmelly and Ray (2018) (3)	Healthcare Technology (1)
Social engagement	Neuland and Hough (2010), Sharmelly and Ray (2018) (2)	FMCG, Healthcare Technology (2)

Table 5.2: Strategies summarized.

6 | Discussion and Conclusion

This chapter commences with synthesizing the results of the sub-questions to answer the main research question. It then discusses the findings and the limitations of this research. Finally, recommendations for future research and the conclusion are provided.

6.1 Synthesis of the Results

In the problem statement, the strong growth of emerging and developing markets, and the potential gains for MNCs entering these markets, is pointed out. The results from the literature and the case companies support this view: MNCs indeed recognize the potential of expanding into emerging and developing markets.

From the literature on frugal innovation five frugal innovation strategies are deduced. MNCs can employ a Frugal Innovation Orientation (FIO) strategy, thereby solely focusing on an economic value proposition. They can introduce a local R&D center and engage in customer co-creation. The products should be cheap, focus on core functionalities and have an optimized performance level. Furthermore, the products should match the quality of the brand.

A local R&D facility and customer co-creation can both solve the challenges of consumer complexity and gaining acceptability for the product. Furthermore, maintaining the brand's quality, and offering products that are cheap, focus on core functionalities, and have an optimized performance level will also enhance the products acceptance. Finally, ensuring cheap products also answers to the challenge of having a consumer group with low disposable income. All these three challenges to which these frugal innovation strategies offer a solution are business challenges. The FIO strategy does not directly answer to any of the identified challenges. However, from the article by Geradts et al. (2019), it becomes clear that social innovation is difficult for MNCs and sticking to an economic value propositions thus avoids this challenge all together.

Introducing a local R&D facility is also identified as one of the current strategies of MNCs within the category of "localization".

The current strategies of MNCs in emerging and developing markets approach a broader range of the identified challenges. Localization includes also "obtaining local political support" and thus constitutes a possible solution to institutional voids. Furthermore, in case of local production, it solves the trade regulation challenges. Hindustan Lever uses local means of transport to overcome the infrastructure deficiencies and reach isolated BoP consumers. Currently MNCs adapt their products and their pricing, thus answering to the challenges of having a low-income consumer group, while also gaining

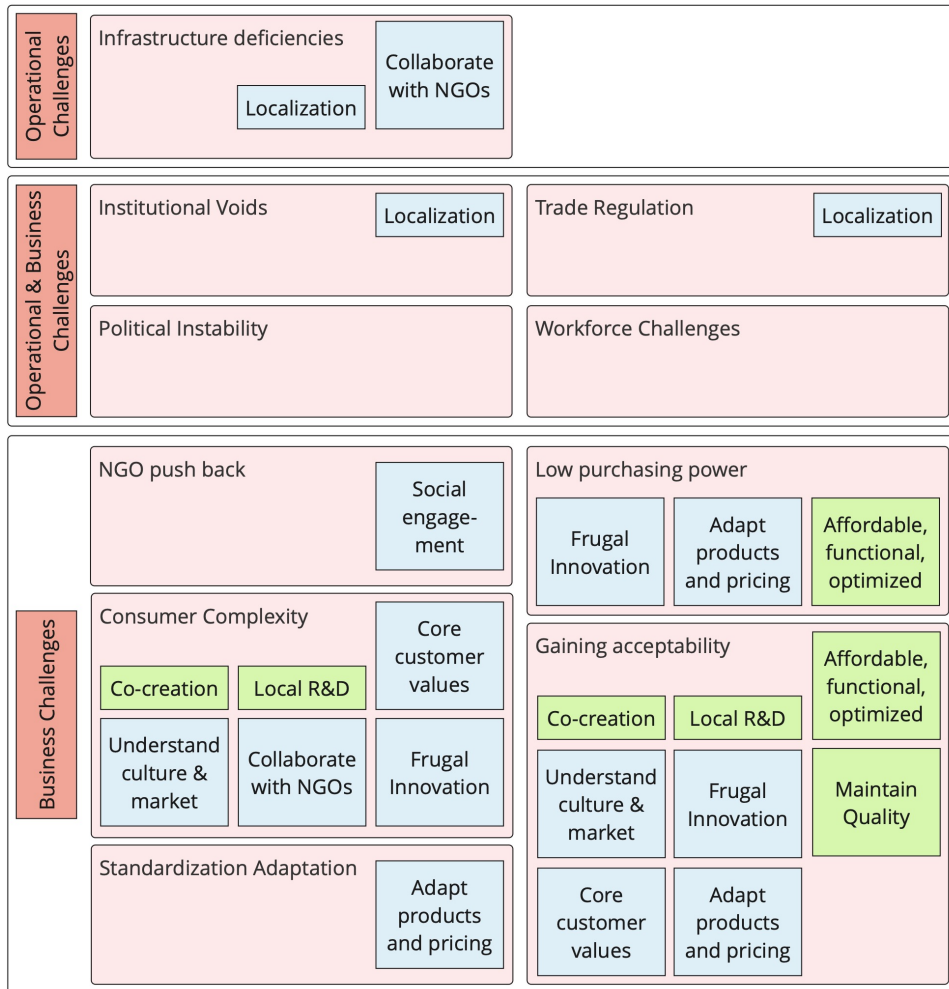


Figure 6.1: Challenges, and frugal innovation and current MNC strategies.

acceptability for their products. Apart from that, the category includes the approach of "modular design" thus posing a potential solution to the S-A balance challenge. Collaborating with NGOs provides insights into the local communities and thus helps in solving the challenge of consumer complexity. It can also pose a solution to infrastructure deficiencies and lack of distribution networks. The strategy of aiming for "understanding the local culture and market" and identifying "core customer values" also helps in solving the challenge of "consumer complexity" and furthermore supports the acceptability of products by being able to offer a better fit with consumers. Social engagement by the MNCs can help against push-back of NGOs and support collaborations between the two, since NGOs then might consider the social benefits of MNCs. Finally, some MNCs engage in frugal innovation and thus resolve the same three challenges as frugal innovation strategies. The strategy of focusing on market potential does not answer to any of the identified challenges. However it includes the strategy of making large investments which resolves the challenge of the midway trap. The midway trap is not listed in the final challenges since it was only mentioned in one source.

Only for the two challenges, "workforce challenges" and "political instability" no potential solutions could be identified in the current strategies of MNCs.

All challenges that frugal innovation strategies potentially resolve are already being resolved by the current strategies of MNCs. Therefore, the frugal innovation strategies are not essential but could complement the current strategies. However, some frugal and current strategies do overlap and therefore it can be argued that MNCs currently already use frugal innovation strategies.

6.2 Review of the Findings

This study adopts the perspective of MNCs and explores frugal innovation as a potential solution to the various challenges MNCs face in emerging and developing markets. The involvement of MNCs is assumed to be essential in supporting the economic growth of these markets since their resources can support the scaling of frugal innovations and thus enhance living standards for local populations that currently have limited or no access to consumption.

While this research confirms that MNCs indeed face many challenges in emerging and developing markets, the identified frugal innovation strategies address only a few of the business challenges. The necessity of frugal innovation strategies for MNCs is thus not supported by the findings of this research. However, MNCs can still use the frugal innovation strategies complementarily, and some are already employed within and outside of the scope of frugal innovation.

The benefits of frugal innovation for MNCs seem to be limited. Considering the context of frugal innovation, there are a few other points worth discussing: While frugal innovation potentially enables MNCs to reach a large customer base, it often comes with low profit margins. Furthermore, consumer profiles at the BoP are diverse (Lappeman et al., 2019). Thus, to maintain simplicity and affordability, products must be adapted which again reduces scalability. Frugal innovation primarily is a product development strategy, which might explain why it mainly provides a solution to business challenges rather than to operational challenges.

Self-cannibalization is another potential risk, especially in developed markets. However, in developing markets, frugal innovations tend to compete rather with non-consumption than with existing products (Winterhalter et al., 2017).

An ethical concern is whether MNCs should let emerging markets develop their own frugal innovations rather than monopolize them. This concern may be less relevant, as frugal innovations developed locally are typically developed by grassroots innovators that prioritize social sustainability, whereas frugal innovations developed by MNCs focus on economic sustainability. Moreover, local innovations often rely on locally abundant resources, are more labor intense, and thus more difficult to scale. These factors make them less attractive for MNCs to pursue. For those innovations that are scalable, often large investments are needed, in which cases MNCs could play a critical role. Large investments again are contradicting the core frugal innovation principle of "doing more with less".

Frugal innovation is a form of resource constraint innovation and primarily not a concept for MNCs. After all resource constraints are not challenges MNCs usually face and have neither been identified as a challenge in this study.

This research aimed to contribute to the literature in several ways. Firstly, it connects the literature on frugal innovation to the literature on MNCs in emerging markets. Secondly, the study establishes a connection between current MNC strategies, challenges, and frugal innovation strategies. While

several links were identified, many challenges remain unaddressed by frugal innovation strategies. Since this study focuses on a top-down corporate approach to frugal innovation, additional insights could be gained from a bottom-up perspective. As a result, this contribution to the literature remains incomplete.

6.3 Limitations of the Methods

The literature review aimed at identifying frugal innovation strategies, the business and operational challenges faced by MNCs in emerging and developing markets, and strategies that MNCs currently employ in those markets.

Multiple frugal innovation strategies are based on older academic works, such as Wohlfart et al. (2016) and Zeschky et al. (2011). This raises the question whether these articles are still relevant. Since there is a relatively low volume of academic work done on frugal innovation, obtaining more recent work can be difficult. Furthermore, the fundamental concept of frugal innovation did not change significantly over the past decade. The literature on frugal innovation was not obtained through a systematic search and only literature on top-down frugal innovation was considered. Adding more sources might have yielded additional frugal innovation strategies.

The results on challenges and strategies were supplemented with four cases of MNCs operating in emerging and developing markets. The aim of obtaining at least eight interviews with representatives of MNCs was not reached. Moreover, the four case companies operate in four different industries. While this was initially done to obtain insight into a wide spectrum of industries, the generalizability of the results was limited. The selection of interview partners did not follow a rigorous design. Conducting additional interviews with interview partners in more similar positions and from a more homogeneous set of case companies, might enable a more solid generalization of the results.

A possible limitation of the semi-structured interviews is that interview partners give socially desirable responses. The topic of this research is however not a controversial one and therefore the impact of socially desirable responses is considered to be limited. During the interviews, it became clear that much of the information obtained through the interviews could have been answered by consulting the gray literature as was done for the furniture company.

The challenges and strategies included in the table were selected based on the amount of sources that mentioned them. Those only mentioned by one source, were excluded. This was done to ensure that the results are generalizable and to focus on the most prevalent challenges and strategies. Some strategies failed to address any of the generalized challenges and certain challenges remained unresolved by the identified strategies. This can be explained by the selection process that excluded a few relevant challenges, like the midway trap.

The case companies added four additional challenges to the table, since these challenges were initially identified by only one source from the literature. No additional strategy was added to the table due to the case companies. If more interviews had been conducted, more challenges and strategies might have been identified, altering the current results. The main research question itself would however not have been answered differently. This would only be the case if additional frugal innovation strategies were identified to potentially resolve the challenges.

Another important limitation relating to the synthesis of the results is the assumption that single isolated strategies can solve a single isolated challenge. Taking into account the complex nature of employing different strategies simultaneously, which in reality is the case, there might be synergy effects not taken into account in this research.

6.4 Recommendations

This section discusses the recommendations for future research. Firstly, recommendations are provided that address the shortcomings of this research. After that, recommendations for future studies building on this research are provided.

6.4.1 Addressing the Limitations

If this research were to be repeated, firstly, the scope of the research should be narrowed to a specific setting. It could for instance focus on a specific industry sector, geographical region, or specific challenges and strategies. An example could be researching healthcare technology MNCs from Europe operating in sub-Saharan African markets and determining how frugal innovation strategies can solve business challenges. Narrowing the scope would simplify the comparison of the obtained results, enhancing their generalizability.

Secondly, the literature search to determine frugal innovation strategies should be more systematic, and include also frugal innovation literature on bottom-up frugal innovation.

Thirdly, the results of one of the case companies was entirely based on gray literature. In the gray literature, many challenges and strategies could be found as well. Therefore, if this research was to be repeated, next to the academic literature, the gray literature might be searched more rigorously to help answer the second sub-question.

Furthermore, to improve the quality of the interview results, more interviews with different employees of the same company should be conducted. In this way, a more complete picture of the case companies can be obtained, substantiating the results. Conducting interviews with other companies in the same sector would then provide a more solid understanding of one industry. Hereby, interview partners should be identified by following a stricter approach so that for instance their position or experience is more comparable. Again this would enhance the generalizability of the results.

Finally, it should be validated which strategies address which challenges.

6.4.2 Building on the Research

This research focuses only on challenges faced by MNCs from developed markets and their strategies. Future research could elaborate also how these compare to emerging market MNCs. This might expand significantly to the findings of this study, since these companies are native to emerging markets.

The results from this study are entirely qualitative and future research might solidify these by applying quantitative research methods. A possible option could be the use of questionnaires to confirm the frugal innovation strategies or how they address the challenges.

This research focuses on a top-down corporate frugal innovation approach, while omitting the bottom-up grassroots frugal innovation approach. Future research might identify additional strategies that follow from this bottom-up approach and determine whether these can be linked to a corporate setting as well.

Frugal innovation often takes place on a rather small scale. Multiple frugal projects of the case companies were split off from the main companies to thrive in smaller subsidiaries. Therefore future research should consider focusing on small and medium enterprises (SMEs) instead of MNCs.

6.5 Conclusion

MNCs recognize the potential of expanding their businesses into fast growing emerging and developing markets. However, when operating in these markets they face a multitude of business and operational challenges. To potentially overcome these challenges, this research identifies five frugal innovation strategies MNCs can consider: The first strategy is the implementation of a FIO strategy, focusing on an economic value proposition and serving consumers in developing markets. Furthermore, MNCs can introduce a local R&D center and engage in customer co-creation. The products they offer should be affordable, focus on core functionalities, and have an optimized performance level. Finally, the products quality should match that of the brand.

Based on the literature and semi-structure interviews, a set of business and operational challenges, as well as current strategies of MNCs in emerging markets are identified.

Most of the identified challenges are covered by currently employed strategies, of which some overlap with the frugal innovation strategies. None of the challenges were solved by frugal innovation strategies only. Therefore, the frugal innovation strategies are not essential for MNCs in emerging and developing markets but could complement their current strategies.

This research connects the literature on frugal innovation to the literature on MNCs in emerging markets. Furthermore, the study establishes a connection between current MNC strategies, challenges, and frugal innovation strategies.

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A | Appendix

A.1 Search Description Knowledge Gap

In order to establish an understanding of the currently available literature in the field of frugal innovation strategies in MNCs operating in emerging and developing markets, the following search strings are used:

Topic of interest	Search string
Frugal Innovation	TITLE-ABS-KEY(((inclusive* OR reverse* OR catalytic* OR lean OR cost* OR DIY OR sustain* OR grassroot* OR grass-root* OR bottom-up* OR bottomup* OR affordab* OR disruptive* OR lowcost*) W/3 (innovat*)) OR bootstrap* OR boot-strap* OR frugal* OR ((bottom* OR base) W/3 (pyramid* OR piramid*)) OR ((resource*) W/3 (constrain* OR scarc*)) OR bricoleur* OR bricolage* OR pro-poor* OR BoP OR jugaad or Jugaad)
Emerging Markets	TITLE-ABS-KEY("emerging market" OR "emerging economy" OR "developing market" OR "developing economy" OR "developing country" OR "low and middle income country" OR "low and middle income economy" OR "LMIC" OR "growth market")
Strategy	TITLE-ABS-KEY("business model" OR strategy OR approach)
MNCs	TITLE-ABS-KEY("western company" OR "western corporation" OR MNC OR multinational OR MNE)

Table A.1: Search strings used in Scopus.

The first search string covers the topics of frugal innovation, frugal innovation synonyms, and terms closely related to frugal innovation. The second search string covers the topic of emerging and developing markets, and synonyms. The third search string covers strategies, and the fourth search string covers multinational corporations. The search strings were combined using the "AND" operator to obtain only those articles that include all of these four topics. Searching in the Scopus database yielded 123 results as of the 22nd of August 2024.

- **Complete Search String:**

(TITLE-ABS-KEY ((((inclusive* OR reverse* OR catalytic* OR lean OR cost* OR diy OR sustain* OR grassroot* OR grass-root* OR bottom-up* OR bottomup* OR affordab* OR disruptive* OR lowcost*) W/3 (innovat*)) OR bootstrap* OR boot-strap* OR frugal* OR ((bottom* OR base) W/3 (pyramid* OR piramid*)) OR ((resource*) W/3 (constrain* OR scarc*)) OR bricoleur* OR bricolage* OR pro-poor* OR bop OR jugaad OR jugaad)) AND TITLE-ABS-KEY (("emerging

market" OR "emerging economy" OR "developing market" OR "developing economy" OR "developing country" OR "low and middle income country" OR "low and middle income economy" OR "LMIC" OR "growth market")) AND TITLE-ABS-KEY (("business model" OR strategy OR approach)) AND TITLE-ABS-KEY (("western company" OR "western corporation" OR mnc OR multinational OR mne)))

All resulting articles from the search are listed in table A.3. Upon reviewing the abstracts of the articles, a total of 115 articles were excluded since they covered topics that were deemed irrelevant for establishing the knowledge gap. These include topics such as emerging market multinational enterprises (EMNEs), small and medium-sized enterprises (SMEs), corporate social responsibility (CSR) or marketing strategies. The exact reason for exclusion of each article is listed in table A.3. The eight articles that are deemed relevant for determining the research gap, are provided in table A.2 and are subsequently summarized.

Article	Title	Type	Methods	Innovation	Scope	Topic
Adegbile and Sarpong (2018)	Disruptive innovation at the base-of-the-pyramid: Opportunities, and challenges for multinationals in African emerging markets	Conceptual Paper	literature review	Disruptive Innovation	BoP in African emerging markets	Challenges, opportunities and recommendations for MNCs pioneering disruptive innovations at BoP.
Agarwal and Brem (2012)	Frugal and reverse innovation - Literature overview and case study insights from a German MNC in India and China	Qualitative Case Study	Literature review, single case study including interviews	Frugal and Reverse-Innovation	Emerging Markets - India and China - Siemens AG	Explores how MNCs are using frugal and reverse-innovation in emerging markets and provides recommendations for MNCs to be successful in these markets including frugal and reverse-innovation.
Anderson and Billou (2007)	Serving the world's poor: Innovation at the base of the economic pyramid	Qualitative Multiple Case Study	Literature review, multiple case study including interviews and field visits	Innovation at the BoP	BoP markets: China, India, Philippines, Brazil	Describes 4A's framework (availability, affordability, acceptability and awareness) as success factors for MNCs to serve the BoP.

Continued on next page

Article	Title	Type	Methods	Innovation	Scope	Topic
Liu (2019)	Navigating the purchasing power gap in new product development in multinational corporations	Qualitative Multiple Case Study	Literature review, multiple case study including interviews	Reverse Innovation	Emerging markets: China, India, and Southeast Asia	Explores how MNCs can achieve a Standardization - Adaptation balance through new product development strategies.
London and Hart (2004)	Reinventing strategies for emerging markets: Beyond the transnational model	Qualitative Multiple Case Study	Literature review, multiple case study including interviews	-	Emerging markets worldwide	Identifies key elements for MNCs to successfully enter emerging markets and overcome challenges.
Mortazavi et al. (2019)	Fostering inclusive innovation in developing economies: an integrative framework for multinational enterprises	Conceptual Paper	literature review	Inclusive Innovation	Emerging and Developing markets	Framework for MNCs to integrate ININ and overcome challenges in developing markets.
Roppelt et al. (2021)	Strategic Alignment of Multinational Corporations for Frugal Innovation—A Case Study	Qualitative Case Study	Literature review, single case study including interviews	Frugal Innovation	Emerging Markets - India and China - Siemens Healthineers	Explores why MNCs engage in frugal innovation and how they can integrate frugal innovation in their global operations.
Sharmelly and Ray (2018)	The role of frugal innovation and collaborative ecosystems: The case of Hyundai in India	Qualitative Case Study	Literature review, single case study including interviews	Frugal Innovation	Emerging markets - India - Hyundai	Frugal Innovation as an essentiality for successful product innovation of DMNCs in emerging markets.

Table A.2: Articles Research Gap.

- Adegbile and Sarpong (2018) suggest that disruptive innovations are well suited for the Bottom of the Pyramid (BoP) in emerging markets. Disruptive innovations are more affordable and meet the requirements of BoP consumers. The authors use the existing literature on BoP, disruptive innovation, and African business context and examine opportunities and challenges that MNCs face when developing disruptive innovations for the BoP in African markets. The authors underpin the vast opportunities in the African economy but also underline the challenges faced. Finally, some recommendations for MNCs are provided to overcome these challenges to suc-

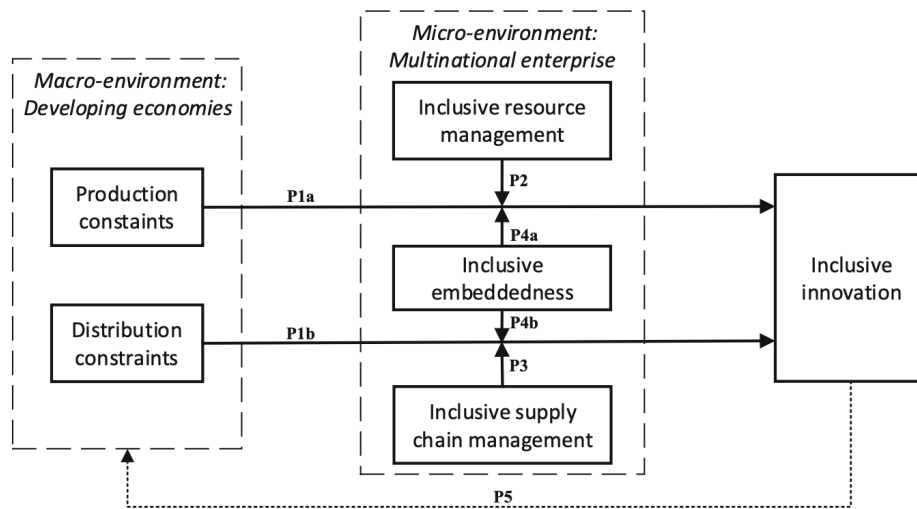


Figure A.1: ININ framework. From Mortazavi et al. (2019).

successfully develop disruptive innovations at the BoP in Africa. Among these are deep cultural and market knowledge and local R&D centers.

- Mortazavi et al. (2019) focus on Inclusive Innovation (ININ) as an approach that can be used to enter into untapped markets. The authors aim at answering the following question through existing literature: "How can MNCs effectively foster Inclusive Innovation when facing the constraints of developing economies?" A literature review on ININ and the challenges MNCs face in emerging markets is provided. The authors conclude that MNCs from developed countries often lack knowledge that is essential to operating in developing countries. The research aims to develop a framework that serves as a solution to some of the challenges faced by MNCs and aids them in benefiting from ININ. The framework A.1 consists of the macro-environment - the developing country, the micro-environment - the MNC, and how they affect ININ. The macro-environment again consists of production constraints and distribution constraints that both negatively impact ININ. The micro-environment is made up of the three pillars of ININ; inclusive resource management, inclusive embeddedness, and inclusive supply chain management. The three pillars reduce the negative impacts of the macro-environmental constraints on ININ. Finally, ININ positively affects the macro-environment.
- Agarwal and Brem (2012) determine how MNCs establish themselves in emerging markets and analyze the innovation strategies of western organizations, using Siemens as a case study. The authors point out the high growth potential of emerging markets and their rising importance as innovation hubs but also name resource constraints as a challenge. The methods used in the research are a literature review and interviews with Siemens employees. The authors conclude that localization, and understanding the core values of consumers in emerging markets are essential for successful expansion into these markets. Apart from that, frugal innovation and reverse innovation are identified as suited strategies for emerging markets.
- Liu (2019) describes the purchasing power gap between developed and emerging markets as a

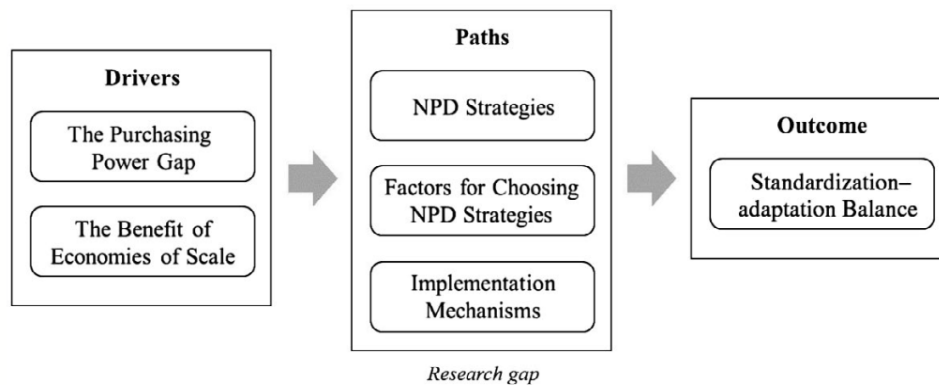


Figure A.2: Theoretical framework of the standardization-adaptation (S-A) balance. From Liu (2019).

challenge for MNCs when operating in emerging markets. The purchasing power gap indicates that consumers are less affluent in emerging markets and that products need to be adapted. Adaptation is however costly while standardization can help reducing the product prices through economies of scale. Therefore, Liu (2019) emphasizes the necessity of finding a balance between standardization and adaptation. The author identifies three new product development (NPD) strategies in the literature: product simplification, product retaining, and reverse innovation. Liu (2019) also conducted interviews with employees of five different MNCs to determine their NPD strategies. Finally, five key factors MNCs should consider when evaluating the suitability of the NPD strategies are identified.

- Anderson and Billou (2007) also emphasize the opportunities at the Bottom of the Pyramid (BoP), but also state that challenges in these markets are the reason that opportunities have not yet been fully seized and that Developed Market Multinational Corporations (DMNCs) largely limit their focus to the top and middle class consumers. Based on the academic literature, case studies and interviews, the authors develop a framework to successfully serve the BoP in developing markets. The framework consists of the 4A's as success factors: availability, affordability, acceptability, and awareness.
- London and Hart (2004) point out that developed markets are becoming saturated and that emerging economies pose an opportunity for further growth. MNCs entering those markets however often focus only on the affluent consumers, ignoring the Bottom of the Pyramid (BoP). The authors review the literature for opportunities and challenges for MNCs in emerging economies and review the international business literature on global and emerging market strategies. At the BoP, a significant part of the economy is informal. It is estimated that the informal sector includes about 9 trillion USD in hidden assets as well as a high value of economic transactions. The reason for businesses to operate in the informal economy is mainly because entering the formal economy is too expensive. Another aspect of informal economies is that social contracts and social institutions dominate instead of legal contracts. The authors point out that the economic development in emerging markets might not follow the economic patterns of developed economies. Traditional partners might therefore lack experience and new types of partners e.g.

non-profit organizations should be included. Finally, MNCs are also expected to consider societal and environmental impacts and they might struggle when not creating social value and becoming locally embedded in the social infrastructure. The research uses an exploratory method and aims to build a theory on how companies can successfully enter emerging markets. For this, archived materials have been collected and analyzed and discussions have been held with managers. The study identifies collaboration with non-traditional partners, co-inventing custom solutions, building local capacity and social embeddedness as key elements of operating in emerging markets.

- Sharmelly and Ray (2018) determine the innovation management strategy of Hyundai, a Developed Market Multinational Corporation (DMNC), in India and show how frugal innovation can be essential for a DMNC to enter emerging markets. The authors use a literature review and a single case study method, including interviews with managers. Sharmelly and Ray (2018) conclude that frugal innovation is essential for successful product innovation for emerging markets. For this, firms need frugal innovation capabilities, which can be enhanced through a collaborative ecosystem with local partners and through social embeddedness leading to a deep understanding of the local environment.
- Roppelt et al. (2021) see an opportunity for MNCs to do business in fast growing developing markets. These markets are largely untapped and therefore pose an opportunity for MNCs to grow their business. Simultaneously, problems in these markets could be tackled by providing them with better access to affordable healthcare. Here the authors introduce the concept of frugal innovation and pose the questions why and how MNCs should foster frugal innovation. They use organizational learning theory (OLT) as a theory to explore the research questions. Frugal innovation is understood by the authors as both a process and an outcome. The research questions are explored qualitatively and projects at Siemens Healthineers are used as case studies. Interviews with 18 experts are conducted and finally two frameworks are proposed: The first comprises the motivational factors for MNCs to engage in frugal innovation. The second describes a five-step approach for implementing frugal innovation into the global operations of a MNC.

Table A.3 lists all articles resulting from the literature search and the reasons for exclusion.

Title	Author, Year	Reason for exclusion
Disruptive innovation at the base-of-the-pyramid: Opportunities, and challenges for multinationals in African emerging markets	Adegbile & Sarpong (2018)	Included: Challenges of multinationals in emerging markets
Reversing Gears: Inverting the Innovation-Flow Paradigm with Reverse Innovation	von Janda et al. (2018)	Reverse Innovation drivers

Continued on next page

Title	Author, Year	Reason for exclusion
Capturing Indian Rural Market Through a Proactive Tool: Reverse Innovation	Dhillon (2015)	Reverse Innovation concept and application
Reverse innovation: What kinds of companies drive efficiency to developed economies?	Rafael & Lopes (2020)	Characterise companies that do Reverse Innovation
Launching reverse-innovated product from emerging markets to MNC's home market: A theoretical framework for MNC's decisions	Zhu et al. (2017)	management decisions of reverse innovations
Reverse innovations bridging the gap between entrepreneurial orientation and international performance	Hashmi et al. (2023)	entrepreneurial orientation, reverse innovation and international performance of EMNEs
Building blocks of the reverse innovation process	Dudaklı et al. (2022)	model for successful reverse innovation
Reverse innovation: a global growth strategy that could pre-empt disruption at home	Govindarajan & Trimble (2012)	Reverse innovation is introduced as a strategy for western MNCs in emerging markets
Barriers and facilitators of reverse innovation: An integrative review	Tombini Wittmann et al. (2021)	barriers and enablers of reverse innovation
Fostering inclusive innovation in developing economies: an integrative framework for multinational enterprises	Mortazavi et al. (2019)	Included: Integrative framework for ININ
Going East: a framework for reverse innovation in SMEs	Dellermann (2017)	framework for reverse innovation in SMEs
Frugal and reverse innovation - Literature overview and case study insights from a German MNC in India and China	Agarwal & Brem (2012)	Included: Reverse innovation is included since it is a concept related to FI and it can yield results that include other types of fi, also the definition is not uniform.
Implications of reverse innovation for socio-economic sustainability: A case study of Philips China	Shan & Khan (2016)	Reverse innovation in strategies at Philips
Frugal and reverse innovation for harnessing the business potential of emerging markets - The case of a danish mnc	Agarwal et al. (2020)	How frugal innovations are developed
When markets stagnate: finding new territory through reverse innovation	Tournois (2016)	Reverse innovation in cosmetics brand

Continued on next page

Title	Author, Year	Reason for exclusion
Ambidexterity within a multinational context: how organisations can leverage explorative and exploitative reverse innovation	Roth et al. (2024)	incorporation of reverse innovation in MNCs
The Impact of Reverse Innovation on Localization and Terminology	Carrillo & Sauberer (2019)	Reverse innovation
Low cost-high tech' innovations for China: Why setting up a separate R&D unit is not always the best approach	Schanz et al. (2011)	R&D approaches of MNCs in Asia
Huawei's Expansion and Nokia's Retreat: What Lessons Can We Learn?	Kjellman et al. (2020)	Compares globalisation strategy of Huawei (EMNE) and Nokia
Leadership and CSR driving frugal and reverse innovations: A conceptual framework for SME-MNE partnerships	López-Fernández & Rajagopal (2018)	innovation evolution
India: MNC strategies for growth and innovation	Leavy (2014)	MNC strategies in India (interesting at a later stage)
Innovation systems and sustainability: An approach for regional clustering and MNCs subsidiaries	Filho et al. (2012)	Knowledge interactions in regional clusters
Reverse innovation: a systematic literature review	Hadengue et al. (2017)	Reverse innovation review
The Process Model of Inclusive Innovation from an MNE Perspective: A Case Study of India	Mortazavi et al. (2022)	Inclusive innovation in India
Innovation strategies of Indian market leaders	Krishnan (2012)	Strategies of EMNEs
Navigating the purchasing power gap in new product development in multinational corporations	Liu (2019)	Included: Interesting for strategy
Organizational Ambidexterity and the Elusive Quest for Successful Implementation of BoP Ventures	Reficco & Gutiérrez (2016)	BoP ventures and ambidexterity
What drives technology innovation among the emerging Chinese Enterprises?	Zheng & Wang (2011)	innovation in Chinese MNEs (EMNEs)
Building global teams for effective industrial research and development	de Bedout (2011)	local culture in R&D teams
Strategic Rethinking: Connecting Local-Global Business Models	Gopal & Gupta (2019)	global-local convergence in emerging markets
Innovation capabilities for global R&D projects in subsidiaries	Tarraço et al. (2019)	local R&D subsidiaries

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Title	Author, Year	Reason for exclusion
Emerging global firms: Insights of Chinese multi-nationals in Africa	Amankwah-Amoah & Debrah (2014)	Chinese EMNEs in Africa
Innovative strategic leader transforming from a low-cost strategy to product differentiation strategy	Ray Gehani (2013)	strategy transformation
Will Rota 2030 deliver sustainable innovation? Comparing the ends and means of Brazilian and German auto industry innovation policies	Pelegrina et al. (2023)	Government policy analysis
Leveraging cultural and relational capabilities for business model innovation: The case of a digital media EMMNE	Malik et al. (2022)	Emerging market MNCs
Institutional voids and the philanthropization of CSR practices: Insights from developing economies	Ahen & Amankwah-Amoah (2018)	CSR
Frugal innovation for the BoP in Brazil - An analysis and comparison with Asian lead markets	Wimschneider et al. (2020)	Discusses FI cases in companies in Brazil
Holistic indigenous and atomistic modernity: Analyzing performance management in two Indian emerging market multinational corporations	Malik et al. (2021)	Indian MNCs (EMNEs)
A New Perspective on Strategic Choices for the Survival and Development of Energy Enterprises: An Analysis of Market Power, Innovation Strategy, and Sustainable Development of Major Multinational Oil Companies	Guo et al. (2024)	Decision dilemma of energy enterprises (market power expansion strategy or technological innovation strategy)
Profitability and the poor: Corporate strategies, innovation and sustainability	Hall & Lobina (2007)	private sector participation in water supply
Frugal innovation strategies and global competition in wind power	Gerybadze & Klein (2020)	Wind power based on frugal design concepts
Catch-up as a Survival Strategy in the Solar Power Industry	Awate et al. (2018)	Strategies of Indian solar power MNCs
Acquiring firm-specific advantages: Organizational innovation and internationalization at Indian multinational corporations	Oswal et al. (2014)	Emerging market firms and firm specific advantages
The changing face of project evaluation - Meeting the demands of changing projects, project owners and evaluation criteria	Kelly (2009)	Project evaluation

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Title	Author, Year	Reason for exclusion
Corporate social responsibility in Vietnam: views from corporate and NGO executives	L. Kane et al. (2022)	opinions on CSR practices
From efficiency to legitimacy: the changing logic of internal CSR in emerging multinationals during internationalization	Bu & Chen (2023)	CSR changes within EMNEs
A Systematic Review of the Bottom/Base of the Pyramid Literature: Cumulative Evidence and Future Directions	Dembek et al. (2020)	Review on BoP literature
Alternative Distribution Channels to Reach the Bottom of the Pyramid in an Emerging Market: An Extended Abstract	Kapelianis et al. (2017)	Distribution in the BoP
The evolution of base of the pyramid approaches and the role of multinational and domestic business ventures: Value-commitment and profit-making perspectives	Borchardt et al. (2020)	Evolution of BoP approaches
Sustainable supply chain management in Base of the Pyramid food projects-A path to triple bottom line approaches for multinationals?	Gold et al. (2013)	Sustainable supply chain management in the BoP
Driving Social Innovation in Bottom-of-the-Pyramid Markets through International Social Alliances: The Role of Legitimacy	Pillai et al. (2024)	legitimacy in the BoP
Managerial Beliefs Regarding Banking Activity at the Bottom of the Pyramid in an Emerging Economy	Corder et al. (2016)	Background on BoP
Marketing to the bottom of the pyramid: opportunities in emerging markets	Omar, Williams (2009)	Buy and sell opportunities at the BoP
New markets and new products: Strategies for reaching the base of the pyramid	Isaac (2012)	Business strategies for the BoP
Sourcing or selling: The Value Flame at the Base of the Pyramid	Williams Jr. et al. (2011)	Model for tapping into potential of emerging markets
Transforming innovation and development practice in the global south?: Myths, realities and the prospects for base-of-the-pyramid approaches	Murphy (2017)	Myths of the BoP approach
Strategic choices of an MNE in an emerging market: the case of Perfetti Van Melle	Mahasuar (2023)	Analysis of strategic choices of an Italian MNE in an emerging market

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Title	Author, Year	Reason for exclusion
Unintended consequences of business with 4 billion: Lessons learned from first generation BOP strategies	Landrum (2011)	unintended consequences of BOP strategies
Determinants of foreign-owned subsidiary performance in emerging economies: Evidence from Taiwan	Dahms (2017)	Subsidiaries in Taiwan (developed)
Lights on or trade off?: Can base-of-the-pyramid approaches deliver solutions to energy poverty?	Wilson et al. (2017)	Energy poverty in the BoP
Beyond local responsiveness - Multi-domestic multinationals at the bottom-of-the-pyramid	Gooderham et al. (2016)	Business model innovation
The influence of motivations on international location choice in least developed, emerging and developed countries: evidence from Chinese MNEs	Angulo-Ruiz et al. (2022)	International location decisions of EMNEs
Value Co-creation in Multinational Enterprises' Services Marketing at the Bottom-of-the-Pyramid Markets	Leposky et al. (2020)	determinants of effective service marketing in the BoP
Sustainable solid waste management using a base-of-the-pyramid approach	Stutz (2017)	Waste management in developing countries
Marketing strategies at the bottom of the pyramid: Examples from nestlé, danone, and procter & gamble	Payaud (2014)	BoP marketing strategies
Reaching the bottom of the pyramid: micro life insurance in India	Muthiah (2011)	Case study
Serving the world's poor: Innovation at the base of the economic pyramid	Anderson & Billou (2007)	Included: Challenges and approaches
Marketing at the bottom of pyramid: Market attractiveness and strategic requirements	Chikweche (2013)	strategic marketing for BoP
Improving the developmental impact of multinational enterprises: policy and research challenges	Narula & Pineli (2019)	Policies for developing countries
Multinationals, state enterprises and heavy industry: from Girvan to Blitzer	Auty (1991)	Investments of developing countries in industry
Marketing to the base of the pyramid: A corporate responsibility approach with case inspired strategies	Santos & Laczniak (2012)	decision principles for managers
Targeting Consumers at the Bop: What Implications?	Payaud & Merunka (2016)	conceptual model of BoP marketing strategies

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Title	Author, Year	Reason for exclusion
Serving rural low-income markets through a social entrepreneurship approach: Venture creation and growth	Prado et al. (2022)	social ventures of MNCs
Industrialization in a unified development strategy	Streeten (1975)	role of industrialization in developing countries
Internationalisation of service firms through corporate social entrepreneurship and networking	Ghuri et al. (2014)	corporate social entrepreneurship and relations with NGOs for expansion into BoP
South East Asian development: geographical perspectives	Dwyer (1990)	economic and political analysis of SE Asia
Customer expectations at the urban bottom of pyramid in India: A grounded theory approach	Srivastava (2018)	focused on customers at the BoP
Key success factors for business operations in emerging markets: Qualitative results from sub-Saharan Africa	Neuland & Hough (2010)	Does not include innovation or frugal, identifies key success factors for MNCs in SSA
Far from Silicon Valley: How emerging economies are re-shaping our understanding of global entrepreneurship	Hill & Mudambi (2010)	Entrepreneurship
What Do We Know About Base-of-the-Pyramid Marketing? A Review of the Bop Literature	Cheung & Myers (2015)	review on BoP marketing
Reinventing strategies for emerging markets: Beyond the transnational model	London & Hart (2004)	Included: How can mncs enter low income markets
Global shifts in marketing strategy: A new research agenda	Rajagopal (2009)	Marketing strategies
Spotlight on Stuart L. Hart	Powell (2006)	Interview, MNCs as catalyst for sustainable global development
Transfer Pricing Audit Challenges and Dispute Resolution Effectiveness in Developing Countries with Specific Focus on Zimbabwe	Sebele-Mpofu et al. (2021)	Transfer pricing
Strategies for global competition: Transnational chemical firms and Singapore's chemical cluster	Wang & Yeung (2000)	Singapores chemical cluster
Building value at the top and the bottom of the global supply chain: MNC-NGO partnerships	Perez-Aleman & Sandilands (2008)	MNC-NGO alliances benefiting small-scale producers

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Title	Author, Year	Reason for exclusion
Lessons learned on health adaptation to climate variability and change: Experiences across low- and middle-income countries	Ebi & Del Barrio (2017)	health adaptation pilot projects in LMICs
A methodology for supporting strategy implementation based on the VSM: A case study in a Latin-American multi-national	Espinosa et al. (2015)	EMNEs
Research and development facilities of multinational enterprises in India	Aoyama & Parthasarathy (2012)	India as a preferred location for R&D facilities
Toilets for all: corporate social entrepreneurship in Bangladesh and countries in Sub-Saharan Africa	Trusty et al (2021)	Case study for students
Explaining Export Performance: A Comparative Study of International New Ventures in Finnish and Indian Software Industry	Kundu & Renko (2005)	Exports
Multinationals and the european poor: Reverse knowledge transfer or ad hoc solutions?	Zucchella & Malvestito (2019)	Reverse innovation to target poor consumers in developed markets
River Sand Mining and Its Ecological Footprint at Odor River, Nigeria	Akanwa (2020)	Ecological footprint of mining
Does Eco-Innovation of Emerging Market Firms Benefit from Knowledge Spillovers of MNC in a Multi-dimensional Task Environment?	Qu et al. (2024)	Knowledge spillovers
Frugal innovation in the expansion of a multinational subsidiary in an emerging market	Arend et al. (2023)	evolution of a frugal innovation
Dodging bullets: The heterogeneous effect of political violence on greenfield FDI	Witte et al. (2017)	effects of political violence on greenfield FDI
Frugal innovation: Aligning theory, practice, and public policy	Soni & Krishnan (2014)	categorises frugal innovation types
Make poverty business: Increase profits and reduce risks by engaging with the poor	Wilson & Wilson (2017)	argues for more business with the poor
Not one segment: using global and local BoP characteristics to model country-specific consumer profiles	Lappeman et al. (2019)	generic BoP consumer segmentation not fit for multi-country BoP consumer profile
Are market-based solutions a viable strategy for addressing micronutrient deficiency? Lessons from case studies in sub-Saharan Africa and South Asia	Henson & Agnew (2021)	market potential for nutrient-dense foods

Continued on next page

Title	Author, Year	Reason for exclusion
MNEs' regional headquarters and their CSR agenda in the African context	Gruber & Schlegelmilch (2015)	Regional headquarters and CSR
A fuzzy cooperative game theoretic approach for multinational water resource spatiotemporal allocation	Liu et al. (2020)	water resource allocation in multinational river basins
Gyan Dairy: charting the growth strategy	Sinha & Thakur (2023)	Case study for students
Are mid-segment markets in India still elusive to MNCs?	Krishna Prasad (2018)	market segmentation India
The necessity of a global competition LAW LA nécessité d'un DROIT mondial de la concurrence	Heinemann (2004)	Law
Corporate social responsibility strategy and economic business value of multinational companies in emerging economies: The mediating role of corporate reputation	Abugre & Anlesinya (2020)	MNC reputation and CSR
No article	/	/
Innovation in emerging markets and the rise of emerging market MNEs	Mudambi (2010)	EMNEs competencies
MNE-SME co-innovation in peripheral regions	Prashantham & Bhattacharyya (2020)	MNE-SME collaboration policies
When Davids start becoming Goliaths: Unique capabilities of emerging-market multinational enterprises and how they foster growth in developed markets?	Malik (2017)	EMNEs capabilities for developed markets
Local innovation: The key to globalisation	Jha & Krishnan (2013)	Interview with MNC executives about innovation strategies in India
Beating the monochrome: emerging market multinationals and the bricoleur approach to embracing heterogeneity	Basu & Majumdar (2018)	Social identities of Indian MNCs (EMNEs)
Learning from Failure: Case Insights into a UK-India Technology Transfer Project	Brem & Moitra (2012)	technology transfer Indian MNC (EMNE)

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Title	Author, Year	Reason for exclusion
The role of frugal innovation and collaborative ecosystems: The case of Hyundai in India	Sharmelly & Ray (2018)	Included: Strategy of MNC in EM
Can environmental innovation benefit from outward foreign direct investment to developed countries? Evidence from Chinese manufacturing enterprises	Bai et al. (2020)	outward foreign direct investment, environmental innovation
Strategic CSR practices, strategic orientation and business value creation among multinational subsidiaries in Ghana	Anlesinya & Abugre (2022)	CSR and business value creation
Strategic Alignment of Multinational Corporations for Frugal Innovation—A Case Study	Roppelt et al. (2021)	Included: Approach to align FI with traditional innovation
A mobile health intervention for patients with depressive symptoms: Protocol for an economic evaluation alongside two randomized trials in Brazil and Peru	dos Santos et al. (2021)	cost effectiveness of a psychological intervention
Enhancing foreign subsidiaries' performance through relational ties, market- and nonmarket-based capabilities	Thoumrunroje & Kapasuwan (2022)	nonmarket- and market-based capabilities
Do high-performance work systems mediate the relationship between HR practices and employee performance in multinational corporations (MNCs) in developing economies?	Abugre & Nasere (2020)	HR and performance
Integration modes, global networks, and knowledge diffusion in overseas M&As by emerging market firms	Li et al. (2019)	Mergers and acquisitions
Internationalization strategies of chinese it service suppliers	Su (2019)	Case study of Chinese IT service firms
Striving for sustainable development: The impact of corporate social responsibility on corporate performance of Chinese manufacturing multinationals in Africa	Zhang & de Vries (2023)	CSR and corporate performance of Chinese MNCs in Africa

Table A.3: Reasons for exclusion of articles for the research gap.

A.2 Search String Sub-question 2

- **Search string for the second sub-question:**

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( TITLE-ABS-KEY ( "emerging market" OR "emerging economy" OR "developing market" OR "de-
veloping economy" OR "developing country" OR "low and middle income country" OR "low and
middle income economy" OR "LMIC" OR "growth market" ) AND TITLE-ABS-KEY ( "business
model" OR strategy OR approach ) AND TITLE-ABS-KEY ( "western company" OR "western cor-
poration" OR mnc OR multinational OR mne ) ) OR ( TITLE-ABS-KEY ( ( "emerging market" OR
"emerging economy" OR "developing market" OR "developing economy" OR "developing coun-
try" OR "low and middle income country" OR "low and middle income economy" OR "LMIC" OR
"growth market" ) ) AND TITLE-ABS-KEY ( challenge OR problem ) AND TITLE-ABS-KEY ( (
"western company" OR "western corporation" OR mnc OR multinational OR mne ) ) ) AND PUB-
YEAR > 2017 AND PUBYEAR < 2025 AND ( LIMIT-TO ( LANGUAGE , "English" ) ) AND ( LIMIT-
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Companies" ) OR LIMIT-TO ( EXACTKEYWORD , "MNE" ) OR LIMIT-TO ( EXACTKEYWORD
, "Multinational Firms" ) OR LIMIT-TO ( EXACTKEYWORD , "MNCs" ) OR LIMIT-TO ( EXAC-
TKEYWORD , "Multinational Corporation" ) OR LIMIT-TO ( EXACTKEYWORD , "MNC" ) OR
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tional Enterprises (MNEs)" ) OR LIMIT-TO ( EXACTKEYWORD , "Multinational Oil Companies"
) OR LIMIT-TO ( EXACTKEYWORD , "Multi-national Companies" ) OR LIMIT-TO ( EXACTKEY-
WORD , "Multinational Corporation (MNC)" ) )
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A.3 Interview Guide

Introduction

I am a master's student at TU Delft, and currently writing my thesis for the masters degree in Management of Technology. I am conducting interviews to better understand the strategies that multinational corporations employ when entering and operating in emerging and developing markets, as well as to identify the challenges they face in these settings. This interview will last approximately 45 minutes and will be done in English. It will start with general questions about your background and experience, followed by research-specific questions focused on the companies strategies and challenges in these markets, and will conclude with a short wrap-up. The interview will be audio-recorded through Microsoft Teams using the platform's built-in transcription feature. After the interview, the audio recording will be transcribed, and the transcript will be anonymized and coded. You will have the chance to review the anonymous code, which is the only part that will be included in the thesis. All personal details, the recording, and the transcript will be stored securely on TU Delft's institutional storage and retained for up to two years, with deletion scheduled for January 1, 2027. The data may

be reused for future scientific and educational activities related to the topic of frugal innovation, but please rest assured that you will remain completely anonymous in all resulting materials. All personal data will be handled in full compliance with the European General Data Protection Regulation. Your participation in this interview is entirely voluntary, and you may withdraw at any time or skip any question you do not wish to answer. Please let me know if you understand and consent to these terms, including the recording and the planned usage of data.

- Comment on the background and role of the interviewee and mention why they are relevant for the research and that their specific insights are helpful. Link their experience to the subject. This should create an atmosphere of social engagement and interaction and allow the interviewee to identify themselves with you and the topic you present. (Finding information online is simple, but that does not stimulate a good conversation, nor facilitates valuable interview outcomes.)
- Write down the location, time, and date, and start recording

Before the interview

- Research current role and background of interviewee.
- Find out about current emerging and developing markets the firm operates in.

General questions

- Can you provide a brief overview of your background and your current role? (Question might not be relevant though, since this information can also be found on LinkedIn or might be previously known.)

Questions

- Are there any strategies that your MNC uses to enter emerging and developing markets?
- What strategies does the company use to enter emerging and developing markets?
- What are the strategies to expand in these regions?
- Which factors are considered by the MNC when they determine their market strategy? E.g.: consumer behavior, economic and regulatory factors, distribution infrastructure, etc. (These are not mentioned right away).
- Which underlying characteristics would describe the identified strategies? E.g.: ESG, sustainability factors, affordability constraints, etc. (These are not mentioned right away).
- Who are the primary target groups?
- How are the activities in emerging and developing markets linked to the MNCs' long term strategy?
- If not yet clear:

- How important are emerging and developing markets for the company's overall turnover?
- Can you give a few examples of products you offer in these markets?
- What challenges does your company face in these emerging markets? (If the interviewee struggles with coming up with challenges, direct them by saying that they can think of challenges concerning operations, regulations, and cultural differences. This will not be asked directly as to prevent a biased answer.)
- How do the current strategies adequately address these challenges?
- To what extent could these challenges be addressed better?

Wrap up

A short summary of what has been discussed is given. Final question:

- Is there anything that we may have missed during this interview that you consider to be important in the context of strategies and challenges of MNCs in emerging and developing markets?
- Which other actors do you think/know that would be interesting to interview?

Thank you for your time and the valuable input.

A.4 Definitions of Frugal Innovation

Reference	Definition
Agarwal and Brem (2012)	"Frugal innovation involves designing solutions specifically for low-income market segments."
Agarwal et al. (2017)	"Frugal innovation is "good-enough," affordable products that suffice the needs of resource-constrained consumers."
Agnihotri (2014)	"Frugal innovation refers to products and services that are developed under resource constraints."
Basu et al. (2013)	"Frugal innovation is also an innovation process design in which customers are the key focus to develop accessible, adaptable, affordable, and appropriate products."
Brem and Wolfram (2014)	"Frugal innovation has low to medium sophistication, medium sustainability, and medium emerging market orientation."
Cunha et al. (2013)	"Frugal innovation to be product innovation when there is a scarcity of affluent customers and distinguish it from bricolage, which is when material resources are scarce, and from improvisation, when time is scarce."

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Reference	Definition
George et al. (2012)	"Frugal innovation is ... innovative, low-cost and high-quality products and business models originating in developing countries and exportable to other developing countries or even the developed world, often termed as 'frugal innovation'."
Gupta (2012)	"Frugal innovation is a new management philosophy, which integrates the needs of the base of the pyramid (BoP) market as a starting point to develop solutions that are expected to be very different from the alternative solutions."
Hossain et al. (2016)	"Frugal innovation is a resource scarce solution (i.e., product, service, process, or business model) that is designed and implemented despite financial, technological, material or other resource constraints, whereby the final outcome is significantly cheaper than competitive offerings (if available) and is good enough to meet the basic needs of customers who would otherwise remain un(der)served."
Kuo (2014)	"Frugal innovations are products and services that focus on crucial needs, spare resource use or eliminate non-essential features in the design process."
Santos et al. (2020)	"it seems that frugal innovation is more appropriate to explain the phenomenon about how to perform innovation under resource-constrained conditions"
Sharma and Iyer (2012)	"Frugal innovation stems from resource scarcity: utilizing limited resources to meet the needs of low-income customers."
Weyrauch and Herstatt (2016)	"Frugal innovation consists of three attributes: substantial cost reduction, concentration on core functionalities, and optimized performance level."
Wohlfart et al. (2016)	"Frugal (i.e., simple, plain) innovations restrict products and services to basic functionalities and embed them in innovative business models to make them affordable for price-sensitive customer groups."
Zeschky et al. (2014b)	"Frugal innovations are typically built on new product architectures that enable entirely new applications at much lower price points than existing solutions."
Zeschky et al. (2014a)	"Frugal innovation has a higher technical novelty and a higher market novelty than good-enough innovation and cost innovation."
Zeschky et al. (2011)	"'good-enough,' affordable products that meet the needs of resource-constrained consumers"

Table A.4: Definitions of frugal innovation adapted from Hossain (2018) with the addition of Agarwal and Brem (2012), Santos et al. (2020), Wohlfart et al. (2016) and Zeschky et al. (2011).

A.5 Challenges and Strategies

A.5.1 Literature

The articles that are reviewed to assess the challenges and strategies are summarized in the following table:

Article	Type	Methods	Scope	Topic
Adegbile and Sarpong (2018)	Conceptual Paper	literature review	BoP in African emerging markets	Discusses challenges in the context of MNCs developing disruptive innovations at the BoP in Africa.
Agarwal and Brem (2012)	Qualitative Case Study	Literature review, single case study including interviews	Emerging Markets - India and China - Siemens AG	Includes challenges that Western firms are facing in emerging markets identified from the literature. Strategic implications follow from the case study.
Anderson and Billou (2007)	Qualitative Multiple Case Study	Literature review, multiple case study including interviews and field visits	BoP markets: China, India, Philippines, Brazil	4A's (availability, affordability, acceptability, awareness) framework results from case studies and answers to challenges.
Ervits (2018)	Research Paper	Literature review, uses patent statistics to measure innovation activities	Innovation activities of DMNCs & EMNEs	Researches how DMNCs & EMNEs locate their R&D activities.
Hoshino (2023)	Qualitative Multiple Case Study	Literature review, multiple case study	MNCs: Worldwide including Bangladesh, Brazil, India, Kenya, FMCG & chemical industry	Explores four cases of SMEs entering developing countries through collaborating with NGOs and international organizations. Cases of Japanese MNCs are also described.
Jha and Krishnan (2013)	Panel Discussion	Introduction based on literature, interviews	India - Business software company, American multinational conglomerate, Healthcare technology company	Discuss challenges and strategies of MNC R&D centers in India.
Lappeman et al. (2019)	Research Paper	Literature review	South Africa	Compares global BoP consumer profile from literature with local BoP consumer profile in South Africa.

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Article	Type	Methods	Scope	Topic
Leavy (2014)	Conceptual Paper (Master-class)	Literature review - Reviews three books	Emerging markets - India	Describes the midway trap - a challenge, and provides a solution.
Liu (2019)	Qualitative Multiple Case Study	Literature review, multiple case study including interviews	Emerging markets: China, India, and Southeast Asia	Purchasing power gap and obtaining standardization-adaptation balance is a challenge, new product development strategies are results and possible strategies.
London and Hart (2004)	Qualitative Multiple Case Study	Literature review, multiple case study including interviews	Emerging markets world-wide	Identifies key elements for MNCs to successfully enter emerging markets and overcome challenges.
Lopez-Vega and Tell (2021)	Qualitative Multiple Case Study	Literature review, multiple case study including 14 interviews	Brazil, seven subsidiaries of Swedish MNCs	Explores the technology strategy of MNCs' subsidiaries in emerging markets.
Ma et al. (2019)	Systematic literature review	Literature review	Emerging markets	Explores the role of host country headquarters as an integral part of the implementation of MNCs' strategies in emerging markets.
Mortazavi et al. (2019)	Conceptual Paper	literature review	Emerging and Developing markets	Lists innovation challenges for developing economies found in the literature.
Neuland and Hough (2010)	Qualitative Multiple Case Study	Literature review, multiple case study including interviews	Emerging markets - sub-Saharan Africa - Coca-Cola Company; Diageo plc; SABMiller plc; MTN; Coca-Cola Sabco; Standard Bank; Shoprite; Game; Promasidor; Game Stores; Ogilvy (FMCG, service providers, retailers)	Identifies key success factors of MNCs that operate successfully in emerging markets.

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Article	Type	Methods	Scope	Topic
Roppelt et al. (2021)	Qualitative Case Study	Literature review, single case study including interviews	Emerging markets - India and China - Siemens Healthineers	Explores why MNCs engage in frugal innovation and how they can integrate frugal innovation in their global operations.
Saranga et al. (2018)	Qualitative Multiple Case Study	Literature review, multiple case study including interviews	China & India, automotive industry	Describes the coevolution of local firms and DMNCs in the automotive industry in India and China.
Seifzadeh et al. (2020)	Qualitative Multiple Case Study	Literature review, multiple case study including 42 interviews	Emerging markets - Iran	Explores strategic actions of MNCs in response to institutional restrictions in emerging economies.
Sharmelly and Ray (2018)	Qualitative Case Study	Literature review, single case study including interviews	Emerging markets - India - Hyundai	Frugal Innovation as an essentiality for successful product innovation of DMNCs in emerging markets.
Stevens and Newenham-Kahindi (2020)	Inductive, Qualitative Study	Literature review, 445 interview partners including 99 expatriates working for DMNCs	East & Central Africa: Burundi, Democratic Republic of Congo, Kenya, Rwanda, Tanzania, Uganda. Companies in construction, mining, manufacturing, energy, telecommunications	Researches how MNCs manage corruption in sub-Saharan Africa. Compares EMNEs and DMNCs.
Zeneli et al. (2018)	Qualitative Multiple Case Study	Literature review, interviews, survey	Emerging markets	Researches the effect of terrorism on MNCs' operations in emerging markets and their strategies to mitigate this risk.

Table A.5: Articles used to answer the second sub-question.

A.5.2 Challenges and Strategies from the Literature

Challenge	Setting	Source	Author
Infrastructure deficiencies & market access	Africa BoP	Literature	Adegbile and Sarpong (2018)
Consumer culture: no money, value conscious	Africa BoP	Literature	Adegbile and Sarpong (2018)
Lack of knowledge & R&D	Africa BoP	Literature	Adegbile and Sarpong (2018)
Local political conditions	Africa BoP	Literature	Adegbile and Sarpong (2018)
Corruption and lack of patent protection	Africa BoP	Literature	Adegbile and Sarpong (2018)
Infrastructure Deficiencies, Lack of Distribution Channels	BoP markets: China, India, Philippines, Brazil	Literature & case studies	Anderson and Billou (2007)
Low Income of BoP consumers	BoP markets: China, India, Philippines, Brazil	Literature & case studies	Anderson and Billou (2007)
Gain acceptability for products	BoP markets: China, India, Philippines, Brazil	Literature & case studies	Anderson and Billou (2007)
Consumers inaccessible to conventional advertising	BoP markets: China, India, Philippines, Brazil	Literature & case studies	Anderson and Billou (2007)
development and implementation of regulation or legislation	Africa, Japanese MNCs	Japan External Trade Organization (survey)	Hoshino (2023)
political or social instability	Africa, Japanese MNCs	Japan External Trade Organization (survey)	Hoshino (2023)
financial affairs, financing or foreign exchange	Africa, Japanese MNCs	Japan External Trade Organization (survey)	Hoshino (2023)

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Challenge	Setting	Source	Author
Poor infrastructure	Africa, Japanese MNCs	Japan External Trade Organization (survey)	Hoshino (2023)
Hiring and workforce problems	Africa, Japanese MNCs	Japan External Trade Organization (survey)	Hoshino (2023)
Trade regulation	Africa, Japanese MNCs	Japan External Trade Organization (survey)	Hoshino (2023)
Infrastructure deficiencies	Healthcare technology - India	Interview	Jha and Krishnan (2013)
BoP consumer profiles differ	South Africa	Literature review	Lappeman et al. (2019)
Midway Trap	Emerging markets - India	Literature review	Leavy (2014)
corrupt and incompetent government	India	Literature review	Leavy (2014)
Infrastructure deficiencies	India	Literature review	Leavy (2014)
Unpredictable tax policies	India	Literature review	Leavy (2014)
Standardization adaptation balance	China, India, Southeast Asia	Literature review, case studies	Liu (2019)
Low purchasing power, ensure affordability	China, India, Southeast Asia	Literature review, case studies	Liu (2019)
Push back from NGOs	Emerging markets	Case study	London and Hart (2004)
Traditional partners lack relevant experience	Emerging markets	Literature review	London and Hart (2004)
Social contracts and social institutions dominate	Emerging markets	Literature review	London and Hart (2004)

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Challenge	Setting	Source	Author
Underdeveloped institutional environments, weak political and legal institutions	Emerging markets	Literature review	Ma et al. (2019)
Infrastructure deficiencies	Emerging and developing markets	Literature review	Mortazavi et al. (2019)
Insufficiently skilled local workforce	Emerging and developing markets	Literature review	Mortazavi et al. (2019)
Lack of proper protection for intellectual property rights	Emerging and developing markets	Literature review	Mortazavi et al. (2019)
Difficult political and economic conditions	Emerging and developing markets	Literature review	Mortazavi et al. (2019)
Limited access to finances	Emerging and developing markets	Literature review	Mortazavi et al. (2019)
Inefficient bureaucracy	Emerging and developing markets	Literature review	Mortazavi et al. (2019)
Low purchasing power of local population	Emerging and developing markets	Literature review	Mortazavi et al. (2019)
Infrastructure deficiencies	Emerging markets - sub-Saharan Africa	Literature review	Neuland and Hough (2010)
Insufficiently skilled local workforce	Emerging markets - sub-Saharan Africa	Literature review	Neuland and Hough (2010)
Poor distribution networks	Emerging markets - sub-Saharan Africa	Literature review	Neuland and Hough (2010)

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Challenge	Setting	Source	Author
Institutional voids	Emerging markets - sub-Saharan Africa	Literature review	Neuland and Hough (2010)
MNCs' deficient knowledge of local talent pool & inability to attract competent local employees	Emerging markets - sub-Saharan Africa	Literature review	Neuland and Hough (2010)
Corruption	Emerging markets - sub-Saharan Africa	Literature review	Neuland and Hough (2010)
Religious & racial conflicts	Emerging markets - sub-Saharan Africa	Literature review	Neuland and Hough (2010)
Lack of intellectual property protection	Automotive industry - China and India	Case study	Saranga et al. (2018)
Coerced partnership with locals	Pharmaceutics - Iran	Case study	Seifzadeh et al. (2020)
Political hostility	Food industry - Iran	Case study	Seifzadeh et al. (2020)
Ban on foreign ownership	Industrial tools manufacturing - Iran	Case study	Seifzadeh et al. (2020)
Culture of usage absent	IT consulting - Iran	Case study	Seifzadeh et al. (2020)
Missing codes and guidelines	Engineering and services - Iran	Case study	Seifzadeh et al. (2020)
Import restrictions	Auto manufacturer and dealership - Iran	Case study	Seifzadeh et al. (2020)
Structure of buyback contracts	Oil and gas - Iran	Case study	Seifzadeh et al. (2020)
Import and export red tape	Shipping - Iran	Case study	Seifzadeh et al. (2020)

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Challenge	Setting	Source	Author
Lack of skilled talent	Emerging markets	Literature review	Sharmelly and Ray (2018)
political and economic uncertainty	Emerging markets	Literature review	Sharmelly and Ray (2018)
Lack of risk capital	Emerging markets	Literature review	Sharmelly and Ray (2018)
Institutional voids	Emerging markets	Literature review	Sharmelly and Ray (2018)
Corruption	East and central-Africa	Case study	Stevens and Newenham-Kahindi (2020)
Terrorism	Emerging markets	Case study	Zeneli et al. (2018)

Table A.6: Challenges MNCs face in emerging and developing markets, extracted from the literature.

Strategy	Setting	Source	Author
Collaborate with other companies & NGOs	Africa BoP	Author suggestion	Adegbile and Sarpong (2018)
Understand local culture and market	Africa BoP	Author suggestion	Adegbile and Sarpong (2018)
Local R&D	Africa BoP	Author suggestion	Adegbile and Sarpong (2018)
Obtain local political support	Africa BoP	Author suggestion	Adegbile and Sarpong (2018)
Localization (including R&D)	Siemens in India and China	Case study	Agarwal and Brem (2012)
Identify customer core values	Siemens in India and China	Case study	Agarwal and Brem (2012)
Frugal and Reverse Innovation	Siemens in India and China	Case study	Agarwal and Brem (2012)
Ensure Availability	BoP markets: China, India, Philippines, Brazil	Literature & case studies	Anderson and Billou (2007)

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Strategy	Setting	Source	Author
Ensure Affordability	BoP markets: China, India, Philippines, Brazil	Literature & case studies	Anderson and Billou (2007)
Ensure Acceptability	BoP markets: China, India, Philippines, Brazil	Literature & case studies	Anderson and Billou (2007)
Ensure Awareness	BoP markets: China, India, Philippines, Brazil	Literature & case studies	Anderson and Billou (2007)
Locate R&D facilities in emerging markets	DMNC innovation activities	Literature review, patent statistics	Ervits (2018)
Joint ventures/partnerships with universities, companies, and NGOs	Nisshin Food Co., Ltd - Kenya; Danone - Bangladesh	Case study	Hoshino (2023)
Rural-urban sales channel and price differentiation - affordability	Danone - Bangladesh	Case study	Hoshino (2023)
Localization of products	Nisshin Food Co., Ltd, Kenya	Case study	Hoshino (2023)
Sale in smaller portions	Hindustan Unilever - India	Case study	Hoshino (2023)
Added nutrients	Nisshin Food Co., Ltd, Kenya; Danone - Bangladesh	Case study	Hoshino (2023)
Sell scans per click	Healthcare technology - India	Interview	Jha and Krishnan (2013)
Co-creation, understanding customer needs	Healthcare technology - India	Interview	Jha and Krishnan (2013)

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Strategy	Setting	Source	Author
Localization	Business software company - India	Interview	Jha and Krishnan (2013)
Large initial investment	American multinational conglomerate - India	Interview	Jha and Krishnan (2013)
Determining specific market needs	American multinational conglomerate - India	Interview	Jha and Krishnan (2013)
Become local	American multinational conglomerate - India	Literature review	Leavy (2014)
Tailor products to local market and span different price points	India	Literature review	Leavy (2014)
localized business model	India	Literature review	Leavy (2014)
long term view of investment and focus on potential	India	Literature review	Leavy (2014)
Local partnerships and ecosystem	Hindustan Lever - India	Case study	London and Hart (2004)
Identify core customer values and needs	Hindustan Lever - India	Case study	London and Hart (2004)
Collaborate with non-traditional partners	Hindustan Lever - India	Case study	London and Hart (2004)
Adapt products to local conditions	Alfa Laval and SKF - Brazil	Case study	Lopez-Vega and Tell (2021)
HCHQ	Emerging markets	Literature review	Ma et al. (2019)
Social programs	All MNCs - sub-Saharan Africa	Case studies	Neuland and Hough (2010)

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Strategy	Setting	Source	Author
Adapting products, packaging, distribution, and promotion to local market needs	All MNCs - sub-Saharan Africa	Case studies	Neuland and Hough (2010)
Investing ahead of demand	Diageo, MTN, SABMiller - sub-Saharan Africa	Case studies	Neuland and Hough (2010)
Effective use of expatriates	All MNCs - sub-Saharan Africa	Case studies	Neuland and Hough (2010)
Partnering with government	SABMiller and Standard Bank - sub-Saharan Africa	Case studies	Neuland and Hough (2010)
Build local ecosystems and facilities in anticipation of future market growth	Siemens Healthineers - China, India	Case study	Roppelt et al. (2021)
Identify core needs of target group	Siemens Healthineers - China, India	Case study	Roppelt et al. (2021)
Frugal innovation	Siemens Healthineers - China, India	Case study	Roppelt et al. (2021)
Separate traditional and frugal innovation teams	Siemens Healthineers - China, India	Case study	Roppelt et al. (2021)
Introduction of existing and derived products (CKD/SKD)	Automotive industry - China and India	Case study	Saranga et al. (2018)
New country specific product	Hyundai - India	Case study	Saranga et al. (2018)
Partnerships	Automotive industry - China and India	Case study	Saranga et al. (2018)
Conformity	Foreign MNCs in Iran	Case studies	Seifzadeh et al. (2020)

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Strategy	Setting	Source	Author
Configuration	Foreign MNCs in Iran	Case studies	Seifzadeh et al. (2020)
Informal networks	Foreign MNCs in Iran	Case studies	Seifzadeh et al. (2020)
Development of new arrangements	Foreign MNCs in Iran	Case studies	Seifzadeh et al. (2020)
Modular design	Hyundai - India	Case study	Sharmelly and Ray (2018)
Collaborations with local suppliers, local partnerships	Hyundai - India	Case study	Sharmelly and Ray (2018)
Local R&D	Hyundai - India	Case study	Sharmelly and Ray (2018)
Frugal innovation	Hyundai - India	Case study	Sharmelly and Ray (2018)
process management to reduce cost and improve quality and flexibility	Hyundai - India	Case study	Sharmelly and Ray (2018)
Close interaction among teams within the company (engineering, R&D, design, manufacturing)	Hyundai - India	Case study	Sharmelly and Ray (2018)
Social engagement	Hyundai - India	Case study	Sharmelly and Ray (2018)
Acquiescence, avoidance, engagement strategy	Corruption - east and central-Africa	Case study	Stevens and Newenham-Kahindi (2020)
Include terrorism threat into strategy	Emerging markets	Case study	Zeneli et al. (2018)

Table A.7: MNC strategies extracted from the literature.

A.5.3 Challenges and Strategies from the Interviews

Table A.8 summarizes the challenges that the case companies face in emerging and developing markets. Table A.9 lists the strategies that these companies employ.

Challenge	Company	Setting	Source
Low trust of NGOs	Healthcare Technology	For frugal innovation projects in Africa	Presentation
MNCs are static and bureaucratic	Healthcare Technology	Challenging for getting frugal innovations off the ground	Presentation
Ensure affordability and profitability	Healthcare Technology	Fetal Doppler device - Africa	Presentation and interview
Working indirectly	Healthcare Technology	Emerging and developing markets	Interview
Geopolitical instability	Healthcare Technology	Emerging and developing countries	Interview
Infrastructure deficiencies	Healthcare Technology	Developing countries	Interview
Customers do not want refurbished products (acceptability)	Healthcare Technology	Emerging markets	Interview
Scaling is difficult	Healthcare Technology	Emerging and developing markets	Interview
Ensure affordability and profitability	FMCG	Emerging and developing markets	Interview
Infrastructure deficiencies	FMCG	Rural areas in emerging and developing markets	Interview
High taxes, import challenges	FMCG	Kenya, Nigeria	Interview
Increasing ingredient prices	FMCG	Emerging and developing markets	Interview
Quantity of different products	FMCG	General challenge	Interview
Finding the right talent locally	Household Appliances	China, emerging markets	Interview
Import quota	Household Appliances	Indonesia	Interview
Import challenges	Household Appliances	India - certification	Interview
Ensure affordability and profitability	Furniture	India	Gray Literature

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Challenge	Company	Setting	Source
Finding the right talent locally	Furniture	India	Gray Literature
Understanding Consumers	Furniture	India	Gray Literature

Table A.8: Challenges of Case Companies.

Strategy	Company	Setting	Source
Africa Innovation Hub	Healthcare Technology	R&D strategy in Africa	Presentation
Funding guaranteed by executives	Healthcare Technology	Frugal Innovation projects	Presentation
Collaborations with NGOs and non-profit organizations	Healthcare Technology	Africa	Presentation and Interview
Spin off projects	Healthcare Technology	Small scale frugal innovations	Presentation
Local Teams	Healthcare Technology	Emerging and developing markets	Interview
Expand to countries where scaling is possible	Healthcare Technology	India, Indonesia, Kenya	Interview
Different product segments and payment options	Healthcare Technology	Emerging and Developing markets	Interview
Local R&D center	Healthcare Technology	India	Interview
Determine what global organizations are focusing on	Healthcare Technology	Emerging and Developing markets	Interview
Spin off projects	FMCG	Small scale innovations	Interview
Collaborations with non-profit organizations	FMCG	Innovations for emerging and developing markets	Interview
Local Teams	FMCG	Worldwide	Interview
Expand to countries where scaling is possible	FMCG	Philippines	Interview
Adapt products to local markets	FMCG	Worldwide - China, India, Nigeria, South Africa	Interview

Continued on next page

Strategy	Company	Setting	Source
Sell smaller portions	FMCG	Emerging and developing markets	Interview
Teaching farmers to get higher yields	FMCG	India	Interview
Local Teams	Household Appliances	Worldwide	Interview
Expand to countries where scaling is possible	Household Appliances	China, India, Indonesia	Interview
Different product segments (knocked down), adapt products to local markets	Household Appliances	Worldwide	Interview
Match quality to brand	Household Appliances	Worldwide	Interview
Expand to countries where scaling is possible	Furniture	India	Gray literature
Adapt products to local markets	Furniture	India	Gray Literature

Table A.9: Strategies of Case Companies.