Sustainable Business at the Base of the Pyramid: An Empirical Investigation

by

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Preface

“For the boat to make it to its destination, everyone must paddle. You can't change the world alone — you will need some help — and to truly get from your starting point to your destination takes friends, colleagues and the good will of strangers.”

William H. McRaven

The past three years as PhD student at Jacobs University have been full of aspirations, challenges and memorable experiences. I would like to use this opportunity to express my gratitude to everyone who contributed to this project directly and indirectly. I would like to acknowledge and thank my supervisor Professor Dr. Julia Bendul for her continuous advice, guidance, encouragements and for always pushing me to overcome my limits. Special thanks go also to Professor Dr. Guido Möllering for all his critical and thought provoking insights. I would like to think Prof. Cees van Beers for joining my dissertation committee and reviewing this thesis on such short notice. I am grateful for the continuous engagement and advisement from my colleagues: Henning, Christoph, Mr. Chankov, Marie, Victor, Vasile and Tim. Having such amazing colleagues made every office day a fun day. I would like to express my gratitude to all of my co-authors for their openness, collaboration and patience. Without the support of all the experts who shared their experiences and valuable insights during the expert interviews and 100+ entrepreneurs, directors, managers and employees from all around the world who filled in the survey, it would have not been possible to complete this thesis.

I would also like to remember the help and support I have received from numerous people in the previous chapters of my life, in particular my teachers from secondary school and high school: Doamna Galina, Niculina, Iulia, Doamna Vrabioiu, Mirela and Doamna Enache. I would like to thank my family, in particular my mother and sisters for always being there for me. I would like to show my love and appreciation for my partner, colleague, co-author, fiercest critic and best friend, Arpan. Thank you all!
Abstract

Sustainable development issues have been at the forefront of public policy, academic debate, private sector decision making and civil society opinion in the past decade. In order to address aspects related to climate change, global poverty and inclusive economic growth, collaboration between various stakeholders from different sectors and geographical regions is needed. There is increasing pressure coming from governments and civil society on firms of all sizes to incorporate social and ecological aspects into their business activities. Current literature has explored issues of sustainability mainly in the context of industrialized countries and with a strong focus on ecological aspects. Yet, literature has scarcely addressed issues of sustainable business efforts in the context of poverty which presents unique challenges and critical interactions between economic, social and ecological issues.

This thesis investigates sustainable business concerns in the context of low-income markets, also known as Base of the Pyramid. The aim of this research is to understand how to enhance sustainable performance of business efforts for inclusive and environmentally friendly economic growth from the perspective of micro, small and medium sized enterprises operating in Base of the Pyramid markets. In order to achieve this aim, drivers, approaches, mechanisms and interdependencies of sustainable performance are investigated. For this purpose, insights are borrowed from several relevant research streams, namely international business in low-income markets, frugal and resource constrained innovation, sustainable business and organizations pursuing multiple goals. The research process begins with a review of existing literature and a multiple case study analysis in order to develop a theoretical framework with drivers, mechanisms and interdependencies of sustainable performance. Hypotheses proposed by the theoretical framework are tested via a large scale empirical study. In a final step, a typology of enterprises operating in Base of the Pyramid markets is proposed to guide the development of practical recommendations.
**List of abbreviations**

<table>
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<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BOP</td>
<td>Base of the Pyramid</td>
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<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
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<td>GLIM</td>
<td>General Linear Model</td>
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<td>MDG</td>
<td>Millennium Development Goals</td>
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<td>MNC</td>
<td>Multinational Corporations</td>
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<td>MSME</td>
<td>Micro, Small and Medium-Sized Enterprises</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>R&amp;D</td>
<td>Research and Development</td>
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<tr>
<td>SDG</td>
<td>Sustainable Development Goals</td>
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<td>SEM</td>
<td>Structural Equation Modelling</td>
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# 1 Introduction

## 1.1 Problem description and motivation

The issues related to economic development, globalization, climate change and global poverty have come to the forefront of current affairs, academic debate, policy making discussions and agenda of private companies. From a socio-economic perspective, the world’s wealth is accumulating while inequality gaps are increasing (United Nations, 2015). From an environmental perspective, visible impact of climate change along with activists and government pressure urge civil society, companies and the world as a whole to find new paths to development while considering nature as a main stakeholder of interest (Stubbs & Cocklin, 2008). In order to account for these challenges, United Nations has developed the Sustainable Development Goals (SDG) to provide guidelines on how to achieve “socially inclusive and environmentally friendly economic growth” (Sachs, 2015). Sustainable development as a normative concept and intellectual pursuit, aims to comprehend complex and dynamic interactions between global economy, society and the physical environment and ‘calls for a world in which economic progress is widespread, extreme poverty is eliminated, social trust is encouraged through policies that strengthen the community, and the environment is protected from human-induced degradation’ (Sachs, 2015; page 3). The interdependencies between the three mutually reinforcing pillars, economic growth, social development and environmental protection combined with dynamic interactions between different stakeholders reveal the multifaceted nature of sustainable development approach (UN World Summit on Sustainable Development, 2002). The magnitude and complexity of the challenges require such multifaceted solution approach which combines efforts of stakeholders from different sectors and geographical regions with differing underlying motivations.

There is tremendous pressure coming from governments, Non-Governmental Organizations (NGO) and civil society on private sector, in particular on multinational corporations (MNC) to address sustainable development challenges and incorporate social and ecological aspects in
their operations (Porter & Kramer, 2011; Ahlstrom, 2010). Additionally, companies need to adapt to oversaturation of developed markets and develop new business models, products and services to exploit the fast growing middle and low income customer segments in developing and emerging economies (Prahalad & Mashelkar, 2010). Subsequently, management scholars have proposed that the market space with billions of low-income consumers in developing countries can provide a fertile ground for MNC to define and operationalize their sustainability agenda (Hart and Dowell, 2010). MNC can combine profits with social objectives by providing affordable products and services to Base of the Pyramid markets (BOP) (Prahalad, 2006a; Prahalad & Hart, 2002; Prahalad & Hammond, 2002). BOP markets refers to segments of population on a global, country or region level and are frequently defined based on income indicators (Kolk et al., 2013) such as annual purchasing power parity ranging between $1500 to $3000 (London, 2007) or daily income threshold of up to $2 (Banerjee & Duflo, 2007). Depending on the measure used, the actual market size can be estimated between 2.7 and 4 billion people (London et al., 2014; Karnani, 2007; Hart & London, 2005; Prahalad & Hammond, 2002).

In order to explore the potential of BOP markets, frugal innovation has been proposed to guide the development of affordable products and services with the aim to maximize customer value, reduce costs, unnecessary features and complexity (Cunha et al., 2014; Bhatti, 2012). Frugal innovation is an emerging innovation paradigm which ‘aims to bring products, services and systems within the reach of billions of poor’ (Knorringa et al., 2016; page 143). Several success stories of MNC engaging in frugal innovation to approach BOP markets including Unilever’s single-use shampoo sockets, General Electric’s medical devices or Tata’s water purifier have served as role models and inspired many other initiatives aiming to combine goals of profitability with societal and human development aims. However, more than 15 years after the initial narrative of Prahalad and Hart (2002) targeting MNC, experiences in the field reveal a different picture compared to the initial expectations. Firstly, recent studies show that the main drivers of change in BOP markets are rather micro, small and medium sized enterprises (MSME) rather than MNC as initially proposed. Secondly, the existence of a fortune at the BOP is controversial since MSME struggle to design economically viable business models while pursuing strong social objectives. For example, PeePoople is a Swedish based enterprise which
started with the aim to solve the world’s sanitation problem and developed an innovative sanitation solution. PeePoople started with the initial BOP idea to combine profits with social objectives, but soon realized the challenges associated with this approach. As a result of numerous difficulties of doing business in BOP markets, PeePoople was restructured to become a local NGO in Kenya. Unfortunately, PeePoople is not an isolated example and many MSME in BOP markets face significant challenges to achieve sufficient scale required to ensure long-term survival, economic viability and significant societal impact (Jenkins & Ishikawa, 2010; London & Hart, 2010).

In order to understand how to enhance sustainable performance of business efforts in low-income settings, several research streams explore central aspects from different theoretical perspectives. Resource constrained and frugal innovation research stream explores the dynamics of innovation processes in resource constrained environments, in particular how to develop affordable products, services and business models for low-income consumers (Pina e Cunha et al., 2014). International business scholars investigate which organizational capabilities and resources are needed to tap the market potential of BOP consumers (London and Hart, 2004). Sustainable business research stream examine how can companies of all sizes engage in sustainable development efforts and incorporate in their decision making natural environment as a key stakeholder (Stubbs and Cocklin, 2008). Several research streams (e.g. social entrepreneurship, hybrid organizations) explore how organizations can balance economic, social and ecological objectives and how pursuing multiple goals may impact performance (e.g. Battilana et al., 2015).

This thesis borrows insights from several relevant research streams and investigates the underlying problem of business efforts for socially inclusive and environmentally friendly economic growth from the perspective of MSME in low-income settings. Although this problem is grounded in practice, this work attempts to contribute to existing body of knowledge by amending the traditional neoclassical model of pursuing economic goals only. The neoclassical approach of pursuing economic goals has been dominant, but in the light of current challenges such as climate change and inequality between and within countries, it is not sufficient (Vargo & Lusch, 2008). In order to thrive in the long-run, businesses of all sizes need to transform the neoclassical model with social and environmental priorities (Stubbs & Cocklin,
2008). However, current literature is scarce on models and theoretical frameworks guiding the process of sustainable value creation, in particular in low-income settings.

This thesis explores and suggests an alternative model with focus on MSME which actively pursue sustainable development goals while creating significant economic value. This work contributes to existing research with an in-depth understanding of drivers, mechanisms, approaches and trade-offs of sustainable business in low-income settings. Initiatives in BOP settings designed with a better understanding of drivers, mechanisms and approaches can lead to significant social and ecological impact while ensuring economic viability and scalability. Therefore, the overarching aim of this thesis is to develop recommendations for MSME on how to develop sustainable businesses in BOP markets and implications for other relevant groups of stakeholders, such as policy makers, MNC, NGO and intermediary organizations.

1.2 Relevant research streams

The topic of sustainable business in BOP markets lies at the intersection between several research streams, namely international business in BOP markets (1), resource constrained, frugal and reverse innovation (2), sustainable business (3), social entrepreneurship and hybrid organizations (4) (see Figure 1). Insights from these research streams are borrowed at various stages of the project. However, the main contribution of the thesis is for the debate on sustainable business in low-income markets.
Figure 1: Overview of relevant research streams and debates

Within the international business studies, the attention of scholars on the untapped market potential at the BOP has started with the articles of Prahalad (2006a), Prahalad and Hart (2002), and Prahalad and Hammond (2002) who emphasize the ‘doing good and doing well’ feature of market entry at the BOP. In these articles, they propose that there is a fortune at the BOP which MNC can explore by providing affordable products and services for BOP consumers. By doing so, MNC can contribute to increasing standard of living in BOP communities and to poverty eradication. This rhetoric has also received a lot of criticism with scholars arguing that selling to BOP poses significant ethical and moral issues due to inherent vulnerabilities of BOP consumers (e.g. Arnold & Valentin, 2013; Karnani, 2007). Other more fundamental criticism even doubts the existence of a fortune at the BOP arguing that market is very small, hard to reach and due to high costs of doing business, it is unlikely to be profitable (e.g. Shivarajan & Srinivasan, 2013; Karnani, 2007). Subsequently, the initial consumer-based approach developed into a BOP model which perceives BOP as active economic value creators in roles of suppliers, producers, service providers (Simanis & Hart, 2008). Literature focuses on the MNC perspective and addresses aspects such as how can MNC develop skills and capabilities to approach BOP markets (e.g. Lim et al., 2013; London & Hart, 2004), emphasizes the role of partnerships between MNC and non-traditional actors such as NGO (e.g. Dahan et al., 2010) and the role of alliance building with existing local business models (e.g. Seelos & Mair, 2007).
More recent work suggests that most initiatives in BOP markets are driven by small local firms or local entrepreneurs rather than MNC (Kolk et al., 2013). Moreover, scholars suggest that there are differences between the approaches employed by small firms and MNC in terms of profitability, poverty alleviation and social orientation (Levänen et al., 2015).

The research stream on resource constrained, frugal and reverse innovation within innovation management explores how traditional innovation paths and approaches are challenged by the emergence of frugal innovation. Frugal innovation challenges the traditional innovation approach of Western companies based on affluence, abundance, extensive use of natural resources, complex product designs and higher prices (Prahalad & Mashelkar, 2010). Due to its focus on resource constrained environments and lack of affluent customers (Pina e Cunha et al., 2014), frugal innovation needs to meet various socio-economic, institutional and environmental constraints and the specific criteria of affordability, acceptability, availability and awareness (Anderson & Markides, 2007). Frugal innovations have been described as disruptive innovations due to their focus on new business models for price-sensitive and unserved consumers and their disruptive nature (den Ouden, 2012; Christensen & Raynor, 2003). Knorringa et al. (2016) suggests that the polycentric nature of frugal innovation which brings together multiple stakeholders from formal and informal sectors across geographical regions and combines international expertise with local knowledge has the potential to disrupt innovation and development patterns. In order to engage in frugal innovation, companies need to overcome current mind sets and develop new organizational capabilities (e.g. Immelt et al., 2009), knowledge and skills on how to build on local structures and expertise (e.g. Prahalad, 2006b), how to use resources, architectural innovation and supplier partnerships (e.g. Ray & Ray, 2011) and how to organize R&D processes (e.g. Zeschky et al., 2011). Frugal innovations can find their way from emerging economies to developed economies and disrupt the Western markets through reverse innovations (e.g. Von Zedtwitz et al., 2015; Immelt et al., 2009). In this sense, frugal innovation challenges that traditional view which suggests that innovation trickles down from industrialized to developing countries (Trimble, 2012).

The sustainable business research stream focuses on exploring barriers and approaches employed by companies to enhance their social and ecological impact, understand drivers and mechanisms of sustainable performance and uncover the nature of interdependencies between economic, social and ecological dimensions. The debate focuses mostly on industrialized
settings and only recently with the rise of frugal innovation and BOP concepts, there is more interest in how sustainable business is operationalized in developing countries, in particular BOP markets (e.g. Pansera & Sarkar, 2016; Levänen et al., 2015). Scholars explore which internal and external organizational capabilities are needed in order to address sustainability concerns (e.g. Stubbs & Cocklin, 2008; Bansal, 2002), which approaches and business models are employed as best practices (e.g. Bocken et al., 2014) and which factors determine sustainable behavior and performance of firms (e.g. Seuring & Müller, 2008; Bansal, 2002; Bansal & Roth, 2000; Berry & Rondinelli, 1998). The traditional perspective on sustainable business suggests that there are interdependencies between the three sustainability dimensions of economic, social and ecological performance (Gold et al., 2013; Seuring & Müller, 2008). Sachs (2015) suggests that the three dimensions should be perceived in terms of their synergies rather than tradeoffs. Yet, there are very few studies exploring the nature of these synergies or tradeoffs (Brix-Asala et al., 2016). The business literature has adopted an efficiency or supply-side perspective to sustainability which promotes reduced usage of resources, materials and production input (Weissbrod & Bocken, 2017; Bocken & Short, 2016). These measures are perceived by critics as rather ‘decreasing unsustainability’ types of measures which are not sufficient to drive sustainable development efforts (Ehrenfeld, 2005). Scholars need to combine efficiency with sufficiency or consumption-based approaches which aim to bring in changes in life style and consumption behaviors (Roiland, 2016; Bocken & Short, 2016). The application of sufficiency based approaches as well as the combination between efficiency and sufficiency is a promising debate with important implications for practice (Weissbrod & Bocken, 2017; Bocken & Short, 2016).

The research streams of hybrid organizations and social entrepreneurship investigate various aspects related to entrepreneurs and enterprises which attempt to combine economic value creation with societal development goals. Researchers in the social entrepreneurship stream question traditional assumptions in management research and explore new ways of addressing social issues where the dominant logic is not economic value creation (Mair & Marti, 2009). The aim of social entrepreneurship research is to explore entrepreneurship processes from different perspectives and theoretical lens. For example, scholars explore aspects related to how personality traits and behavioral attitudes of social entrepreneurs influence the entrepreneurship
processes (e.g. Zahra et al., 2009; Mair & Noboa, 2006), how differences in local context affect the social entrepreneurship initiatives (e.g. Seelos et al., 2011). The research stream on hybrid organizations explore the same phenomenon from governance and institutional theory perspective. Empirical findings suggest that pursuing multiple objectives may cause internal tensions and conflicts within organizations and its internal members (Zilber, 2002). By pursuing multiple objectives and combining different organizational logics, hybrid enterprises are by definition “sites of contradiction, contestation and conflict” (Doherty et al., 2014, page 425).

For this reason, scholars in this research stream investigate the nature of these tensions and challenges association with it (e.g. Battilana & Dorado, 2010), the impact they have on internal decision-making in regard with resource allocation and project prioritization (e.g. Battilana & Dorado, 2010; Zahra et al., 2009), access to resources and stakeholder legitimacy (e.g. Austin et al., 2006).

The research draws secondary insights from an adjacent research stream, namely development research. Studies in development research provides valuable perspectives on the societal impact of frugal innovation and BOP initiatives, unequal power relations, exploitation of BOP markets vulnerabilities and the role of government (Knorringa et al., 2016; Baud, 2016; Kaplinsky, 2011).

1.3 Research scope

The complex nature of the research topic sustainable business in low-income markets requires not only interventions from various private sector actors, such as MNC, large companies and MSME, but also involvement of additional stakeholders such as policy makers, intermediaries and cross-sector actors. Therefore, the BOP landscape includes various actors with their own characteristics and motivations (see Figure 2).

MNC and local large companies entail strategic competence, capital and expertise in market development, international expansion and scaling (Seelos and Mair, 2007; London and Hart, 2004). Cross-sector actors, namely local NGO, community associations and knowledge institutions are often referred as non-traditional partners for private firms in the BOP literature and have extensive local knowledge and networks (Webb et al., 2010; Dahan et al., 2010).
Policy makers represent governments, international banks and agencies with global, regional and local reach who have the role to strengthen regulatory framework, stimulate private sector interventions, sustainable efforts, innovation and growth. The rise in BOP and frugal innovation has determined the emergence of intermediary platforms, hubs, networks and alliances which provide support services (e.g. mentoring, training, business advisory, capital and investors matching) for MSME in BOP markets (Kistruck et al., 2013). In this landscape, BOP actors are important in particular because they are perceived as active creators of economic value rather than passive recipients of products and services (Simanis and Hart, 2008).

MSME are key participants in the BOP landscape because they connect other stakeholders. The BOP literature does not make a clear distinction between the different typologies of MSME operating in BOP markets. However, development researchers distinguish between local survival enterprises which are necessity-driven, street economy types of micro businesses, embedded in networks of families and without clear goals to grow or expand; and growth oriented enterprises which are more specialized, opportunity-driven ventures embedded in business networks and willing to expand (Berner et al., 2012). The distinction between survival and growth oriented enterprises in development research is valuable to define the scope of this study. Although survival enterprises target mostly BOP markets, they are not the focus of this study due to their subsistence and survival logic (which makes it less likely that they will be engaged in societal development efforts). Therefore, in this thesis, MSME refer to growth-oriented enterprises which may be local or foreign-driven and operate in BOP markets by either providing products or services to low-income consumers or sourcing from low-income producers. While the research focuses on MSME operating in BOP markets, this aim is to derive implications and practical recommendations for all relevant groups of stakeholders (see Figure 2).
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1.4 Research gaps

In order to advance the research debate on sustainable business in low-income settings, several important research gaps need to be addressed. Firstly, the BOP and frugal innovation research streams are fragmented, with limited empirical evidence and case studies/anecdotes illustrations (Hart et al., 2016; Kolk et al., 2013). The debate needs further knowledge systematization and empirical testing of hypotheses in order to define further research agenda and specialization areas. Hart et al. (2016) review the landscape of sustainable business in BOP markets and make a call for knowledge systematization in the field. In this sense, there are several important claims in the literature illustrated with case studies, but lacking solid empirical evidence.

Scholars emphasize the need for collaborative approaches in BOP markets, also known as co-creation (Nahi, 2016). Existing studies continuously emphasize the need for collaborative, bottom-up approaches which build upon existing local technical, social and human capital and argue that these approaches may lead to sustainable performance in BOP settings (Simanis &
Hart, 2008; London & Hart, 2004). However, in-depth investigation on which mechanisms and actors, under what circumstances result in sustainable outcomes is missing. Furthermore, solid empirical support for the link between collaborative activities with BOP consumers and economic, social and ecological performance is missing.

Secondly, the literature has been dominated by findings and implications from the MNC perspective. Only more recent studies start to steer the direction of the debate into the MSME perspective mainly due to their strong engagement in local capacity building and strong social orientation (Pansera & Sarkar, 2016; Levänen et al., 2015; Sinkovics et al., 2014). Yet, little is known about the nature of these MSME, their underlying motivations, organizational structures and impact. Literature provides insights on the competences, motivations and characteristics of MNC, yet scholars need to also understand the areas of expertise and strengths of MSME in order to guide further research efforts on multi-stakeholder collaboration. Multi-stakeholder collaboration networks which combine various sources of expertise and core competences can provide a fruitful solution approach to achieve sustainable development goals.

Thirdly, there is lack of theoretical frameworks and models on drivers and mechanisms of sustainable performance in low-income settings. Understanding what drives sustainable performance in industrialized settings has been researched and empirical findings suggest regulatory framework, pressure from key stakeholders, quest for economic opportunities and competitiveness and ethical concerns of leadership as key drivers (Seuring & Müller, 2008; Bansal & Roth, 2000). Yet, the perspective on how to adopt sustainable business mechanisms in context of deep poverty is poorly understood in the literature (Khavul & Bruton, 2013). Moreover, it is not known to what degree current frameworks on sustainable business hold in the context of BOP markets described by deep poverty, weak regulatory framework and unequal power relationships (Khavul & Bruton, 2013; Webb et al., 2010). Environments in developing and emerging countries are highly turbulent and characterized by institutional voids and subsequently firms operating in such environments face higher degrees of uncertainty and complexity (Silvestre, 2015). This raises the question of which mechanisms and drivers are key to sustainable performance in BOP markets.

Fourthly, researchers often refer to frugal and BOP innovation as inherently sustainable (Brem & Wolfram, 2014; Weyrauch & Herstatt, 2016), or to individual dimensions of sustainability.
Yet, sustainability is a broader concept encompassing complex interactions between economy, society, environment and government (Sachs, 2015). The provision of affordable products and services to BOP or promotion of less use of resources does not automatically result in sustainable development (Nahi, 2016; Birtchnell, 2013). MSME cannot address these issues while operating in isolation. This raises the questions of how can these MSME enhance sustainable development, namely which aspects of it, which strategies are successful and can be employed and which partners are relevant in which context.

Sustainable business literature has referred traditionally to the three aspects of sustainability (economic, social and ecological issues) as trade-offs (Gold et al., 2013). Sachs (2015) calls for a more optimistic perspective and proposes to conceptualize and perceive the three dimensions as synergies. Current research provides little empirical evidence on the nature of interactions between economic, social and ecological performance. It can be summarized that in the BOP research the focus in terms of sustainable development is rather on social and economic aspects, the ecological aspects are neglected, while an integrated sustainability perspective is missing (Kolk et al., 2013). There is need for a better understanding of the interdependencies between the three dimensions of sustainable business models in BOP settings. This will enable the development of business approaches which enable improvements in one dimension without harming others.

1.5 Research question and aims

The overarching aim of this thesis is to understand and evaluate how to enhance sustainable performance of business efforts in low-income consumers. This research adopts the perspective of MSME operating in low-income settings, but aims to derive implications for other relevant stakeholders. The overarching comprises of three components. The first component is to investigate approaches and mechanisms which facilitate the integration of economic, social and ecological performance. The second component is to understand and evaluate drivers which determine MSME to adopt specific mechanisms and approaches for sustainable performance. The third component is to explore the nature of interdependencies between the three sustainable performance dimensions. In order to achieve the aim and the three components, the underlying research question of this thesis is formulated as follows:
In order to answer this research question and the three components, descriptive, analytical and pragmatic research aims are derived. The descriptive aims of the thesis are to explore in-depth existing literature from the relevant research streams in order to identify and map definitions for the main concepts, perspectives on the relationships between frugal innovation, BOP and sustainable performance, approaches, mechanisms, drivers and strategies for economic, social and ecological performance. Especially in the context of frugal and BOP innovation, there is a proliferation of definitions in the literature often used interchangeably and thus it is important to review different understandings, delineate common elements and differentiate perspectives. An important descriptive aim includes to review mechanisms, approaches and strategies suggested by current literature and employed by existing frugal products and services in BOP markets. While doing so, the differentiation between private sector actors in MNC and large companies versus MSME can enable a better understanding of approaches and potential outcomes of different types of initiatives in BOP markets. Descriptive goals include the review of empirical cases of frugal products and services in order to understand how business efforts are organized in BOP markets, namely how value chains are configured, value propositions designed, customer groups selected and revenue models planned. For this purpose, the business model perspective will be adopted to guide the understanding of current business efforts organization in low-income markets. One important descriptive aim resulting from the different stages of the project is to understand and define the nature of MSME operating in BOP markets and develop a typology of enterprises in regard to key classification variables. This conceptualization and classification of BOP enterprises is needed to guide further research efforts and derive implications for practitioners. Thus, descriptive aims include:

- How to enhance sustainable performance of business efforts in low-income markets?
Chapter 1

The analytical aims focus on the empirical testing and evaluation of hypotheses developed based on literature reviews and case studies. The first analytical aim is to evaluate how approaches employed by MNC and large companies differ from approaches employed by MSME and how can they lead to sustainable performance. The second analytical aim is to analyse how different frugal products and services, elements of their business models and sustainability strategies relate to economic, social and ecological performance in BOP markets. Thirdly, the impact of integrating BOP in operations on economic, social and ecological performance is analysed. This work attempts to empirically test a theoretical idea celebrated in the literature. Next analytical aim is to evaluate which factors motivate firms to involve BOP in operations and explore relationships between normative orientation, socio-cultural differences and collaboration with cross-sector partners. An important goal is to investigate the nature of interdependencies between economic, social and ecological aspects. Last but not least, relationships between the nature of pursued goals by MSME and sustainable performance dimensions are researched. In this sense, the analytical aims of this thesis include:

**Descriptive Aims**

- Define main concepts: frugal innovation and related terms, sustainable development and sustainability, sustainable performance, BOP markets.
- Explore and map different perspectives and approaches from literature and empirical case studies on drivers, mechanisms, approaches and strategies for sustainable performance in low-income markets.
- Identify and describe how current business efforts are organized in low-income markets.
- Formulate main characteristics and develop a classification of MSME operating in low-income markets.

The analytical aims focus on the empirical testing and evaluation of hypotheses developed based on literature reviews and case studies. The first analytical aim is to evaluate how approaches employed by MNC and large companies differ from approaches employed by MSME and how can they lead to sustainable performance. The second analytical aim is to analyse how different frugal products and services, elements of their business models and sustainability strategies relate to economic, social and ecological performance in BOP markets. Thirdly, the impact of integrating BOP in operations on economic, social and ecological performance is analysed. This work attempts to empirically test a theoretical idea celebrated in the literature. Next analytical aim is to evaluate which factors motivate firms to involve BOP in operations and explore relationships between normative orientation, socio-cultural differences and collaboration with cross-sector partners. An important goal is to investigate the nature of interdependencies between economic, social and ecological aspects. Last but not least, relationships between the nature of pursued goals by MSME and sustainable performance dimensions are researched. In this sense, the analytical aims of this thesis include:
Chapter 1

The pragmatic aims of this thesis include the formulation of recommendations for MSME on how to enhance their long-term survival through economically viable business models while creating strong social and ecological impact in local communities. The insights gained from the perspective of MSME will enable the development of implications for other relevant stakeholders such as MNC and local large companies, policy makers, intermediaries and cross-sector actors. The recommendations include the development of a matrix with areas of action and interest for different typologies of MSME and stakeholder groups. Therefore, the pragmatic aims include:

### Analytical Aims

- Evaluate how approaches employed by MNC and MSME differ and consequently how their impact on sustainable performance may be different
- Analyze how elements of business models and sustainability strategies relate to sustainable performance in BOP markets.
- Evaluate empirically relationships between:
  - BOP integration in value chain operations and sustainable performance
  - Cross-sector collaboration, normative orientation and socio-cultural differences, BOP integration
  - Pursuing economic, social and ecological goals and sustainable performance outcomes.
  - Social and economic performance, ecological and economic performance

### Pragmatic Aims

- Formulate recommendations for MSME on how to survive in the long-run while enhance social and ecological impact.
- Develop implications for other relevant stakeholders including large companies and MNC, intermediaries, cross-sector partners and policy makers.
- Develop matrix of roles and activities for different groups of stakeholders to map the main areas of interest according to the main typologies of MSME.

#### 1.6 Research design

Theoretical foundations
In this thesis, the theory of value co-creation is adopted as a theoretical perspective guiding the understanding of the processes and activities taking place between MSME and the other relevant stakeholders. Co-creation emerges as a new paradigm in management science which emphasizes the role of customers in the firm-centric value creation process and a growing body of literature has emerged since the early 2000s (Galvagni & Dalli, 2014). The main idea of the theory of value co-creation is that firms can improve their economic performance in the short-run and enhance their sustainable competitive advantage in the long-run by actively engaging consumers in value creation activities (Prahalad & Ramaswamy, 2004a,b). Prahalad and Ramaswamy (2004a) refer to co-creation as the emergence of a new meaning for value creation processes from a traditional product and firm-centric to personalized consumer experiences. The drivers of this shift are embedded in the consumer-centric culture of the internet which emphasizes interaction, speed, individuality and openness (Prahalad & Ramaswamy, 2004a). They emphasize customer interaction as ‘the new locus of value creation’ (Prahalad & Ramaswamy, 2004b; page 10).

The theory of co-creation is a grounded in the service science and marketing theory and thereby it inherits from there fundamental assumptions. Theory of value co-creation is selected for the purpose of this study because it fits two fundamental assumptions inherent to the BOP perspective. Firstly, it argues that purpose of the firm is beyond profit maximization and should include societal development goals. Service science/marketing perspective challenge the neoclassical economic theory (Vargo et al. 2008). Service science and marketing theories emphasize a demand driven model of product, service and business model development and perceive customers and other relevant stakeholders as active contributors to the value creation process (Vargo et al., 2008). Secondly, the theory of value co-creation perceives customers as active contributors to the value creation processes. This perspective is aligned with the BOP proposition that perceiving and involving BOP consumers in value creation activities as active contributors and creators of economic value leads to economic value for the focal firm and significant social and ecological impact for local communities (Simanis & Hart, 2008).

**Methodology**
Chapter 1

The philosophical foundations of this study are rooted in the positivist school of thought which ‘emphasizes discovering causal laws, careful empirical observations and value-free research’ (Neuman, 2014). In this approach, the starting point is the logical development of causal-relationships, then the next steps are to connect abstract concepts with precise measurements and empirically tests proposed relationships (Dubin, 1969). Aligned with this approach, the research design of this thesis is divided in three main stages: 1) exploration phase, 2) hypotheses testing phase and 3) development of recommendations phase.

Stage one involves exploration of the relevant research streams in order to identify the main concepts and explore causal relationships between the constructs of interest. In order to ensure that the hypothetical causal relationship is derived based on theory and practical insights, Kubicek (1976) recommends the use of interviews with practitioners, literature reviews and case studies analysis. During the exploration stage, this thesis employs systematic literature review and multiple case study design. Systematic literature reviews combine qualitative and quantitative aspects of content analysis (Brewerton & Milward, 2001) and are valuable methods to capture the conceptual content of a research stream (Tranfield et al., 2003). Multiple case study design is a technique of exploratory nature, employed in the early stages of theory development which enables the researcher to investigate aspects of interest across different contexts and profile hypotheses (Gibbert et al., 2008; Eisenhardt, 1989).

Stage two includes the development, operationalization and empirical testing of hypotheses. After the theoretical framework with causal relationships is developed, the operationalization of key variables in terms of conceptual definition and specific indicators and measures follows. The process of operationalization and the movement from abstract to concrete concepts is critical research step since it is the basis for a good fit between the abstract ideas and empirical world (Neuman, 2014). Data collection involves a survey procedure (Neuman, 2014) where the unit of analysis are MSME operating in BOP markets. Data analysis involves structural equation modeling (SEM) approach and cluster analysis. SEM is an approach within the General Linear Model (GLIM) that allows to run confirmatory factor analyses and regression analyses with latent variables as well as with more than one dependent variable. The SEM supports the testing of empirical hypotheses in order to reject or accept proposed hypotheses. Cluster analysis is a technique employed to develop meaningful typologies, groups or
organizational configurations (Ketchen and Shook, 1996). The technique systematically categorizes a sample of elements along a set of clustering variables with the aim to minimize variance within groups and maximize variance between groups (Ketchen and Shook, 1996).

Stage three encompasses the development of practical recommendations and implications for the relevant stakeholders including large companies and MNC, intermediaries, policy makers and cross-sector actors. The typology developed through cluster analysis in stage two guides the development of recommendations since it provides a fine grained understanding of competences, strengths and challenges faced by MSME.

### 1.7 Course of research

In order to answer the proposed research question, this thesis follows the proposed three research stages structured in four journal papers (Table 1). The exploration phase reviews the literature and case studies (Paper 1 and Paper 2) in order to enable the development of a theoretical framework and hypotheses which are tested via an empirical large scale study (Paper 3). In order to derive more specific recommendations for MSME and implications for other relevant stakeholders, a typology of MSME operating in BOP markets is developed (Paper 4).

The exploration phase comprises two main components, namely the study of existing literature (Paper 1) and analysis of empirical case studies on products and services commercialized in BOP markets (Paper 2). The first component is a systematic literature review of frugal innovation and sustainable development in order to explore the literature on when/how/whether frugal innovation can drive sustainable performance, identify perspectives and conditions/settings under which frugal innovations can drive economic, social and ecological perspectives. This investigation aims to systematize knowledge at the intersection between frugal innovation and sustainable development and therefore entails a general perspective. One important contribution of this study is to highlight that approaches employed by MNC and MSME are different in low-income settings and therefore impact on sustainable performance may also be different. Based on the emerging themes for ecological development, this study concludes that frugal innovation can bring together sufficiency and efficiency sustainability
approaches. The literature review highlights that frugal innovation can drive social performance when coupled with inclusion and strong social orientation of MSME.

The second component of the exploration phase employs secondary data analysis of products and services commercialized in BOP markets and frequently cited in the academic debate in order to investigate the adopted business models, sustainability strategy and impact. This study adopts a business model perspective for the frugal innovation and BOP debate in order to describe how business efforts are currently organized in low-income settings and evaluate how different configurations and elements of business models can result in economic, social and ecological performance. Several interesting insights emerge during the data analysis of this study. Frugal and BOP products and services often start with local given problems and are designed to fit local settings, employ local value chain activities and partnerships with NGOs. The main contribution of this paper is the finding that frugal products and services are not inherently sustainable, but have the potential to engage different actors at different stages of the innovation processes and drive sustainable performance.

Findings from the exploration research stage reveal that frugal and BOP products and services are not inherently sustainable, but have potential to bridge gaps between different aspects of economic, social and ecological sustainability. Moreover, findings show that there is increasing interest in understanding MSME operating in BOP markets and engaging in frugal innovation because they have very strong social orientation, engage actively in local capacity building and drive sustainable performance. Therefore, the perspective of MSME is adopted in the empirical investigation which is presented in the hypotheses testing research phase. Moreover, the hypotheses testing research phase adopts key findings from the exploration stage in order to develop a theoretical framework with causal relationships between drivers, mechanisms and trade-offs of sustainable performance.

The hypotheses testing phase comprises the collection of primary data based on a large scale survey and employment of advanced statistical techniques to test hypotheses on drivers, mechanisms and trade-offs of sustainable performance (Paper 3). In particular, this investigation focuses on testing empirically the hypothesis that the main mechanism for sustainable performance is integration of BOP consumers in operations. Additionally, it
analyzes empirically which factors drive MSME to engage BOP in operations and interdependencies between economic, social and ecological performance. A main finding of this research stage is that MSME operating in BOP markets pursue economic, social and ecological objectives simultaneously and are problem-driven enterprises with very strong social mission. Since the empirical analysis reveals that BOP enterprises pursue multiple objectives related to economic viability, poverty alleviation and ecological impact, this research phase continues with an additional investigation of relationships between goals pursued by MSME in BOP markets and sustainable performance dimensions (Paper 4). Cluster analysis of MSME in the sample reveals six typologies of MSME distinguishable in regard with themes, key partners, pursued goals, and beneficiaries. The typologies represent significant differences in regard with economic and ecological performance. This investigation provides additional empirical evidence that MSME which provide education-related services to BOP actors show better economic, social and ecological performance.

The hypotheses testing research phase is followed by a detailed discussion of theoretical contributions and further research agenda (Chapter 6). For this purpose, the main findings of the thesis are integrated into current theoretical debates and contributions of this work are highlighted for sustainable business in low-income markets and value co-creation. Priorities for further research are also highlighted. The theoretical contributions include insights into the nature and role of MSME operating in BOP markets, the nature of value co-creation in BOP settings, drivers, mechanisms and interdependencies of sustainable performance in low-income settings.

The last research stage, namely development of recommendations is derived from the development of a typology of MSME in BOP markets (Paper 4). This stage formulates key lessons for MSME and implications for key stakeholders based on the findings of this research (Chapter 7). Implications are discussed for large companies, MNC, international hubs, platforms and alliances, policy makers and cross-sector actors. Based on the developed typology of MSME, specific recommendations and areas of interest are proposed in order to outline actions and activities which can be undertaken by various stakeholders in order to support the economic growth and social impact scaling of MSME in low-income settings.
Chapter 8 concludes the thesis with final thoughts and implications for management research beyond low-income markets.

Table 1: Course of research

<table>
<thead>
<tr>
<th>Paper</th>
<th>Methods</th>
<th>Objectives</th>
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| Introduction | | • Formulate problem description, theoretical and practical relevance  
• Define the research perspective  
• Formulate research gaps, underlying thesis goal and research aims |
| Paper 1: Does frugal innovation enable sustainable development? A systematic literature review | Systematic literature review | • Explore different perspectives in the literature on the relationships between frugal innovation and sustainable development |
| Paper 2: Business models for sustainable innovation – an empirical analysis of frugal products and services | Multiple case studies design | • Analyze successful cases of frugal and BOP products and services in order to explore their sustainability strategy and potentials.  
• Identify business model patterns which drive economic, social and ecological outcomes. |
| Paper 3: Drivers and mechanisms of sustainable performance of enterprises at the Base of the Pyramid: An empirical study | Large scale survey  
Structural equation modelling | • Understand drivers and mechanisms of sustainable performance at the BOP from the perspective of MSME  
• Evaluate tradeoffs between economic, social and ecological performance |
| Paper 4: Typologies of Base of the Pyramid enterprises: A cluster analysis | Large scale survey  
Cluster analysis | • Identify relevant typologies of MSME and explore relationships between typologies and sustainable performance |
| Theoretical Contributions | | • Integrate thesis findings into ongoing theoretical debates and highlight the contributions |
| Practical Recommendations | | • Develop recommendations and implications for MSME and other relevant groups of practitioners |
| Conclusion | | • Formulate implications for management research |
Chapter 2:

Paper 1 - Does frugal innovation enable sustainable development? A systematic literature review

Authors: E. Rosca, J. Reedy, J. Bendul


https://link.springer.com/article/10.1057/s41287-017-0106-3

Contribution of E. Rosca to the work: Conducted the literature review, selected, screened and coded the articles reviewed, contributed to the discussion and development of further research agenda and wrote all sections.

Contribution of the co-authors: Both J. Reedy and J. Bendul helped streamline the manuscript, highlight limitations of current research and further research agenda.

Contribution of paper to PhD project:

This paper conducts a systematic literature review of frugal innovation and sustainable development in order to map links between the two research streams and highlight approaches and conditions of when can frugal innovation drive sustainable development outcomes. The study analyses studies on frugal innovation, highlights potential contributions for sustainable development and formulates shortcomings of existing research and further research agenda. The paper contributes to systematize existing knowledge related to potential outcomes of frugal innovation. Moreover, the study differentiates between different types of enterprises, large domestic companies and MNC versus MSME in order to understand the different approaches
employed and their potential outcomes. The study is part of the first research stage, exploration stage and contributes to achieving several important descriptive and analytical goals. From a descriptive goals perspective, this study defines in the context of this thesis terms such as frugal innovation and sustainable development and map different perspectives related to frugal innovation and sustainable development. This study describes based on current literature approaches, mechanisms and strategies which can determine sustainable performance of business efforts in low-income markets. Moreover, it distinguishes between approaches employed by MNC and large companies and MSME, thereby contributing also to analytical goals which aim to understand how do approaches employed by different private sector actors differ and can lead to economic, social and ecological performance.

Insights gained from the systematic literature review are explored in-depth in the following research stages, in particular, the importance of MSME, their normative orientation and engagement in activities with local BOP consumers. The focus on MSME is adopted as a main perspective in the hypotheses testing and development of recommendation research stages. The constructs of normative orientation and engagement in activities with local BOP are employed as driver and mechanism for sustainable performance in BOP settings during the hypotheses testing phase. Finally, this study points out how frugal innovation has the possibility to bring in sufficiency approaches to sustainability in business studies which have been dominated by efficiency perspectives. The combination of efficiency and sufficiency sustainability approaches is suggested as a mechanism to drive economic, social and ecological performance in BOP markets.
Chapter 3:

Paper 2 - Business models for sustainable innovation – an empirical analysis of frugal products and services

Authors: E. Rosca, M. Arnold, J. Bendul

Status of the publication: Published in Journal of Cleaner Production, In Press.

https://doi.org/10.1016/j.jclepro.2016.02.050

Contribution of E. Rosca to the work: Conducted the literature review on frugal innovation and business models, contributed to data collection and analysis of the case studies, performed coding of the cases based on sustainability archetypes, contributed to the discussion and interpretation of results, wrote sections 3, 4 and parts of 1, 2, 5 and 6.

Contribution of the co-authors: Both M. Arnold and J. Bendul reviewed and streamlined the manuscript, coded the cases based on sustainability archetypes and contributed to the discussion and interpretation of the main findings M. Arnold wrote parts of sections 1, 2, 5 and 6 and conducted the contingency analysis based on the inter-rater reliability.

Contribution of paper to PhD project:

This paper employs secondary data analysis and investigates mechanisms, approaches and strategies employed by frugal products and services frequently cited in the literature. The study adopts the business model perspective based on four dimensions (value proposition, value chain, revenue model and target customers) in order to explore how frugal products and services
are brought to markets, how value proposition, value chain, key customer groups and revenue models are designed in the context of BOP markets and how they create economic, social and ecological impact. The main aim of the study is to explore the configuration of business models of frugal products and services in low-income markets, adopted sustainability strategies and economic, social and ecological elements which can lead to sustainable performance. In order to do so, the study reviews literature on frugal and BOP innovation, builds a database of cases frequently mentioned in the literature and collects information in regard to initiators, type of product or service, business model configuration, economic, social and ecological performance. The study continues the exploration research stage, contributes to fulfilling important descriptive and analytical aims and lends valuable insights for hypotheses testing stage. From the perspective of descriptive aims, it conducts an in-depth review of existing conceptualizations of frugal innovation and related terms in the literature, provides a first picture of enterprises operating in BOP markets highlighting their problem-driven nature and highlights various approaches and mechanisms employed to bring frugal products and services to low-income markets. The study reveals how business models are configured and conceptualized in the context of BOP markets and which elements are key to drive economic, social and ecological performance. From an analytical perspective, this study contributes to the first analytical research objective, namely to evaluate how different frugal products and services and their inherent business models relate to sustainability strategies and can lead to economic, social and ecological performance.

The empirical review of frugal products and services shows that engaging local actors (especially women and social minorities) in business activities can drive economic, social and ecological impact and collaboration with cross-sector partners (e.g. NGO, community associations and government) is a key success factor in BOP markets. These insights are used to build the framework during the hypotheses testing research phase. Already the insights from this exploratory phase of the thesis reveal that enterprises in BOP markets create impact beyond offering affordable products and services and engage in education, training and awareness raising campaigns.

Findings in this study suggest that social and ecological value in BOP settings is created by the nature of value creation and configuration activities, namely engagement of local BOP actors,
partnerships with NGOs and employment of sustainable innovation elements. Although this study does not specifically address the differentiation of private enterprises, the sustainability strategy analysis reveals that MNC are more likely to employ approaches which aim to decrease costs, while MSME adopt sustainability approaches which aim to create new sustainable innovations in terms of products, services and systems. Finally, this study also points out the localization of value chain, a sustainability strategy which can act as a mechanism to drive economic, social and ecological performance in BOP markets.
Chapter 4:

Paper 3 - Drivers, Mechanisms and Trade-offs of Sustainable Performance of Enterprises at the Base of the Pyramid: An Empirical Study

Authors: E. Rosca, J. Bendul

Contribution of E. Rosca to the work: Conducted the literature review and hypotheses development, developed items to measure all relevant constructs, formulated questions and arranged them into a questionnaire, sent out the questionnaire to respondents, analysed the data in the form of structural equation modelling, wrote all sections.

Contribution of the co-authors: J. Bendul reviewed the manuscript, helped streamline all sections of the paper and strengthen the discussion.

Contribution of paper to PhD project:

This paper conducts a large scale empirical study in order to test hypotheses on drivers, mechanisms and trade-offs of sustainable performance in low-income settings. This study follows up on insights developed during the exploration stage and adopts the perspective of MSME which operate in BOP markets and provide affordable products and services. The theoretical framework is based on extensive literature review and insights gained from the systematic literature review and multiple case study analysis. The framework suggests that BOP consumer integration is a key mechanisms to drive economic, social and ecological performance in low-income settings, while normative orientation and socio-cultural differences
serve as main drivers for MSME to integrate BOP in their operations and are mediated by collaboration with cross-sector partners. The framework explores also interdependencies between sustainable performance dimensions, namely how social and ecological impact reinforce economic performance.

This study contributes to the descriptive objective of formulating key characteristics of MSME operating in BOP markets. The descriptive analysis of the sample reveals interesting features and characteristics of MSMEs such as their strong social orientation, basic needs focus, influence of the founders and mix of local and foreign knowledge. This paper is part of the hypotheses testing phase and has important theoretical implications because it tests theoretical claims from the literature on a large scale empirically collected data. Therefore, the study contributes to achieve important analytical goals, namely exploration of relationships between drivers, mechanisms and sustainable performance and analysis of interdependencies between economic, social and ecological performance. The findings provide empirical support for several hypotheses, limited support for others, but also reveal interesting aspects to be investigated by further research. The results support the hypothesis that BOP consumer integration determines economic, social and ecological performance and the hypothesis that cross-sector partners mediate the relationship between normative orientation of MSME and BOP consumer integration. Empirical findings show that socio-cultural differences do not represent an important driver for MSME to integrate BOP in their operations. Moreover, the study provides limited evidence to the hypothesis that social performance reinforces economic performance and counter-evidence to the hypothesis that ecological performance drives economic performance.
Drivers, Mechanisms and Trade-offs of Sustainable Performance of Enterprises at the Base of the Pyramid: An Empirical Study

Abstract
The seminal works on Base of the Pyramid markets encourage large companies to explore untapped low-income markets and alleviate poverty by providing affordable products and services. Recent empirical studies suggest that efforts in Base of the Pyramid markets are driven not by large companies, but by micro, small and medium sized enterprises. These enterprises combine organizational elements of traditional revenue generating firms and non-profit organizations. However, their focus on economic, social and/or ecological goals and constraints in low-income markets raises scepticism related to their success in the long-run. To ensure long-term survival of these enterprises, it is necessary to understand mechanisms, drivers and trade-offs of sustainable performance in low-income settings. This study adopts the perspective of micro, small and medium sized enterprises and aims to understand drivers, mechanisms and trade-offs of sustainable performance in low-income markets. In this sense, we develop a theoretical framework and test it empirically employing a unique dataset of 142 enterprises providing basic products and services for low-income markets. Our findings provide strong empirical support that the key mechanism to achieve sustainable performance is the engagement of low-income consumers at various stages of the value chains. We also find that enterprises engage consumers mainly due to strong intrinsic motivation to help rather than pragmatic motivation to overcome information asymmetries. Through our analysis, surprisingly, we do not find sufficient support for the main Base of the Pyramid postulate that social performance reinforces financial performance. We discuss the implications for these important findings and outline further research agenda.

Keywords: Sustainable business, Base of the Pyramid, BOP consumer integration, normative orientation

1. Introduction
Several important social, economic and political trends have determined significant interest in private sector efforts for poverty alleviation. Economic slowdown, changes in the nature of philanthropy and reduction in subsidies available for international development efforts have pushed the market-based approach for sustainable development to gain momentum both in literature and practice
(Helmsing et al., 2015; Doherty et al., 2014; London, 2007). Sustainable development is defined as socially inclusive and environmentally friendly economic growth (Sachs, 2015). Scholars conceptualize it in three performance dimensions – economic, social and ecological development (Dyllick and Hockerts, 2002).

In the context of challenges raised by sustainable development, there is increasing pressure coming from governments and civil society for companies of all sizes to incorporate social and ecological aspects in their operations (Porter and Kramer, 2010). In their attempt to define the new sustainability agenda, management executives turned their attention to the largest target market in the economic pyramid, namely - Base of the Pyramid (BOP) (Hart, 2005). In this study, BOP is defined as the largest segment of the world population where most transactions take place outside the formal economy and therefore can also be described as informal markets (London et al., 2014).

The original works on BOP in the early 2000s emphasize the role of multinationals companies (MNC) and, as a result, research efforts have predominantly explored MNC initiatives in BOP markets (Prahalad and Hart, 2002; Prahalad and Hammond, 2002). However, recent empirical work suggests that most initiatives operating in BOP markets are driven by micro, small and medium size enterprises (MSME) (Kolk et al., 2013). The study adopts the perspective of MSME operating in BOP markets for several important reasons. Firstly, MSME are central in the BOP landscape and collaborate closely with key other stakeholder groups such as MNC, local NGOs, development agencies and BOP consumers. Secondly, MSME address social and ecological aspects in a very comprehensive manner and engage actively in local capacity building, training and education activities (Pansera and Sarkar, 2016; Pansera and Owen, 2015). MSME targeting BOP markets attempt to combine goals of profitability with societal and human development aims (Kolk et al., 2013).

Although there are several success stories of enterprises which effectively balance economic and social goals in BOP markets most struggle to achieve significant growth, human development impact and therefore to survive in the long-run (Jenkins & Ishikawa, 2010). BOP enterprises face challenges related to economic growth and achieving social and ecological impact in the local communities (Hart and Dowell, 2010; Karamchandani et al, 2009). Therefore, there is need for empirically grounded understanding on which drivers and mechanisms determine sustainable performance in low-income settings in order to support MSME in their quest for achieving sustainable development goals. This study addresses the following research question: Which mechanisms, drivers and trade-offs impact sustainable performance in low-income settings? In a review of the current landscape of sustainable business in BOP markets, Hart et al. (2016) highlights the conceptual, case-based and practitioners-oriented literature and call for empirical studies with larger data samples in order to systematize the state of the knowledge in the field and open avenues for further research. This study responds to this call and performs a large scale empirical study in order to test hypotheses related to drivers, mechanisms and performance trade-offs from the perspective of MSME operating in BOP markets. Based on primary data collected through a survey, a sample of 142 enterprises operating in BOP markets is employed and structural equation modelling (SEM) is conducted to test hypotheses derived from literature.
This paper is structured in six main sections. After this introduction, the theoretical framework is introduced and hypotheses are developed building on insights from BOP and sustainable business literature streams. Section three details the methods employed in terms of survey procedure, sample description, data screening, construct operationalization and the SEM approach. Section four summarizes the main findings of the study and uncovers the nature of MSME operating in BOP settings, presents the results of hypotheses testing and additional sensitivity analyses. Section five connects, compares and contrasts our findings with the current academic debate in order to highlight theoretical contributions of this study. Last section concludes with main theoretical and practical implications and outlines the limitations and further research agenda.

2. Literature review and hypotheses development

2.1 Sustainable business in BOP landscape

BOP markets can be seen as informal markets where most transactions take place in informal settings (London et al., 2014). Therefore, the classification of a market as BOP does not depend on geographical country boundaries but rather on market characteristics (Webb et al., 2010). As such, BOP markets are characterized by largely underdeveloped formal institutions where socioeconomic activities are largely guided by informal structures (Webb et al. 2010).

Prahalad and Hammond (2002) emphasize the ‘doing good and doing well’ feature of market entry at the BOP. They suggest that provision of affordable basic products and services to BOP consumers provides both profit opportunities for private enterprises through economies of scale and effective way to fight poverty. Yet, this consumer-based approach has been highly criticized (Shrivarajan and Srinivasan, 2013). As a result of these criticisms, recently a growing consensus has emerged that local economic development can be driven by alternative models where BOP markets are actively involved in the value creation process as service providers, parts suppliers, employees, entrepreneurs and owners. Consequently, the BOP 2.0 model has been proposed in the literature to emphasize the mutual value creation and net-positive social returns (London et al. 2010; Simanis and Hart, 2008). The initial BOP debate emphasizes the role of MNC, but more recent empirical work suggests that MSME are the key players driving the sustainable development agenda in BOP markets (Pansera and Owen, 2016; Pansera and Sarkar, 2015; Levanen et al., 2016; Kolk et al., 2013).

MSME operating in BOP markets need to complement economic concerns with social and ecological priorities (Hart et al., 2016). This is difficult for MSME with limited resources operating in BOP markets. Firstly, MSME faces numerous challenges to become economically viable due to severe affordability constraints (Anderson and Markides, 2007), high cost of operation and high price sensitivity of customers (Prahalad, 2005) as well as scalability issues (London and Hart, 2010). Secondly, BOP enterprises face challenges to balance goals economic goals with poverty alleviation, or ecological issues. Prioritizing social objectives over financial gains may impair the firm’s sustainability or scalability (Sinkovics et al., 2014). While the social aspects of human development and poverty alleviation at the BOP have been largely explored in the literature, the ecological aspects have been neglected (Hart et al., 2016; Kolk et al., 2013). Yunus et al. (2010) emphasize the
importance of ecological considerations for BOP markets in developing countries, because industrial pollution, water shortages and high-priced energy might have devastating effects in the long run for the people living at the BOP. Moreover, the interdependencies between the three sustainable performance dimensions are not yet well understood in the context of BOP markets (Gold et al., 2013). Therefore, economic, social and ecological aspects are interrelated in BOP settings and need to be addressed simultaneously to ensure effective sustainable development (Hart et al., 2016).

In order to support the development of MSME, scholars need to understand what drives sustainable performance in low-income markets. In industrialized settings, empirical findings suggest that pressure coming from external stakeholders (such as NGOs, interest groups) and leadership’s ethical concerns can enforce a firm’s orientation toward social and ecological performance (Bansal and Roth, 2000; Berry and Rondinelli, 1998). Additionally, firms may improve they social and ecological performance as a result of increased legislation and thus aiming to avoid legal costs, penalties and fines (Seuring and Müller, 2008). Yet, BOP markets settings present weak regulatory frameworks and numerous intricacies not well understood yet and thus scholars suggests that current theoretical frameworks and models are not adequate to guide decision making in such settings (Webb et al., 2010; London and Hart, 2004). Therefore, there is need for theoretical frameworks and empirical studies to better understand the drivers, mechanisms and tradeoffs for sustainable performance in low-income settings.

2.2 Theoretical framework and hypotheses

The main objective of this subsection is to develop a theoretical framework drawing on current literature explicating main drivers, mediators, mechanisms and sustainable performance outcomes for MSME operating in BOP settings (Figure 1). Two main motivation drivers for MSME to engage in activities with local communities and drive sustainable performance include overcoming information asymmetries between their original environment and strong normative orientation towards social good and community development. The main mechanism for driving integrated economic, social and ecological performance is actively engaging local BOP consumers in value chain activities (London and Hart, 2010). Often MSME face challenges to approach directly BOP markets and for this purpose local NGOs or community associations mediate the relationships between Socio-Cultural Differences

Drivers and mediator

Mechanism

Sustainable performance

Figure 1: Hypothesized Research Model

<table>
<thead>
<tr>
<th>Drivers and mediator</th>
<th>Mechanism</th>
<th>Sustainable performance</th>
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<tbody>
<tr>
<td>Socio-Cultural Differences</td>
<td>Cross-Sector Collaboration</td>
<td>BOP Consumer Integration</td>
</tr>
<tr>
<td>H1</td>
<td>H2</td>
<td>H3a</td>
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<td>H2</td>
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<td>H4a</td>
<td>H4b</td>
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MSME and local BOP consumers. Sustainable performance comprises of three dimensions, namely ecological, social and economic performance. Scholars perceive the three sustainable performance dimensions as interdependent (Sachs, 2015; Gold et al., 2013), thus, we explore relationships between economic, social and ecological aspects.

**Main concepts definition**

One fundamental assumption in BOP research stream is the existence of significant differences between institutional settings in industrialized markets, developed markets within emerging economics and BOP markets (see Webb et al., 2010; London et al., 2010; London and Hart, 2004). The institutional and social settings in BOP markets present barriers related to weak regulatory framework, capital, financial and labour markets (Webb et al., 2010). Although BOP enterprises target BOP markets, they can be described at the intersection between BOP and the Top of the Pyramid (TOP) or middle pyramid, since rarely the individuals who set up these ventures are from the BOP and most ventures are driven by individuals or companies outside the BOP or even outside the country (Sinkovics et al., 2014). Ventures driven by BOP within BOP markets can be described as survival and subsistence enterprises which do not necessarily aim for economic growth nor specifically target social impact (Berner et al., 2012). Therefore, these types of BOP enterprises are not the focus of this study.

Normative orientation is defined as a general orientation towards concerns related to society’s well-being, such as poverty alleviation and sustainable development. A normative orientation can be found in a company’s values and policies, value proposition of offered products and services, employees motivation and incentives for sustainable practices, sustainable supplier practices, full accountability for the firm’s social and ecological impact (Boons and Lüdeke-Freund, 2013; Gold et al., 2013).

Cross-sector partners include non-profit organizations such as local or international NGOs, cooperatives, professional unions, local community associations, religious organizations, education institutions or governments (Le Ber and Branzei, 2010). The intensity of cross-sector collaboration refers to what extent the focal MSME engages in collaboration with cross-sector partners during the various stages of the value chain (Alexiev et al., 2016).

In BOP settings, we distinguish between consumers and customers. Due to affordability or distribution challenges, it is often the case that BOP enterprises sell their products/services to intermediaries (e.g local kiosks, NGOs, community associations) who have better access to remote BOP markets. Therefore, we use the term BOP consumer integration as the extent to which local BOP consumers are involved in ‘producing and delivering’ products and services (Dabholkar, 1990). The mechanism of BOP integration, also referred as co-creation, has been long mentioned in the BOP literature and used from different perspectives and with different meanings (see for an overview - Nahi, 2016). In this study, we build on operationalization approaches from customer participation and co-creation literature (Chan et al., 2010; Lau et al., 2010) and define BOP consumer integration as the engagement and participation of BOP actors at different stages of the value chain.

Sustainable performance of enterprises operating at the BOP is defined as the integration of economic, social and ecological value (Kolk et al., 2013). Economic performance refers to a firm’s success in terms
of assets, liabilities, ability to self-finance and self-sustained growth. Social performance refers to improvements in the general well-being of stakeholders and general society and includes quality of human life, quality of health care and services, child labour, employees’ safety and health, women empowerment, poverty alleviation (Rosca et al., 2016). Ecological performance refers to improvements concerning eco-design and eco-efficiency as reducing energy, land, resource intensity, and emissions and waste (Bocken et al., 2014).

**Key drivers and mediator for BOP consumer engagement**

Literature identifies two main motivation drivers for MSME to engage BOP in operations. Firstly, there are existing socio-cultural differences which refers to a pragmatic driver related to gaining a better understanding of the BOP market (Simanis and Hart, 2008). Failure to acknowledge local intricacies and peculiarities may lead to inappropriate solutions for the local BOP market and therefore failure of the initiative (London and Hart, 2004). Therefore, socio-cultural differences between the original non-BOP settings of the enterprises and the operational environment in the BOP market lead MSME to engage local BOP consumers in order to overcome information asymmetries. Secondly, MSMEs engage with BOP consumers because they have very strong normative orientation and strong mission towards social development of local communities. MSMEs with genuine desire to improve living conditions of the local communities design their operations to incorporate and empower social minorities (Pansera and Sarkar, 2016). Levänen et al. (2016) found that MSME driven by strong normative orientation focused on local capacity building and inclusion of marginalized individuals. Bendul et al. (2016) found that BOP can be involved at various stages of the value chain as designers, innovators, suppliers, producers and distributors.

Cross-sector organizations act as mediators between enterprises and local BOP markets because they are known to have a long-standing relationship with BOP, valuable local knowledge, trust and legitimacy (Dahan et al., 2010). The valuable local knowledge of leveraged through cross-sector collaboration allows MSME to develop local knowledge, trust and legitimacy (Dahan et al. 2010; Hanh and Gold, 2014). Cross-sector partners enable MSMEs to acquire knowledge on local social issues, gain expertise in stakeholder management, obtain insights and access to new markets and sources of innovation (Webb et al., 2010; Prahalad and Hart, 2002). Additionally, cross-sector partners can be a great source of capabilities for business model development and public development funding (Seelos and Mair, 2005) or more practical support for value chain activities such as distribution, marketing and training to reach BOP consumers (Dahan et al., 2010). Cross-sector partners support MSMEs to adapt to highly uncertain and severe resource constraints markets (Prahalad and Hart, 2002). Hahn and Gold (2014) suggest that in traditional supply chains, MNC and MSMEs tend to adopt central positions, while in the case of BOP networks cross-sector actors are usually in focal positions and act as intermediaries between MSME and the BOP consumers. Nevertheless, partnerships between for-profit enterprises and non-profit oriented cross-sector organizations are challenging. These hybrid partnerships require a common ground of resources, values and processes. The MSMEs and the local cross-sector partners have different organizational identities and this may result in uneven expectations and goals.
Therefore, we argue that MSME build on the local competences and legitimacy of cross-sector actors to engage with local BOP consumers. Thus, the following propositions are formulated:

$H1$: Cross-sector partnership mediates the relationship between normative orientation and BOP consumer integration.

$H2$: Cross-sector partnership mediates the relationship between perceived socio-cultural differences and BOP consumer integration.

Key mechanism for achieving sustainable performance

$BOP$ consumer integration in value chain activities contributes to the economic, social and ecological performance at the BOP in several significant manners.

In order to achieve economic success, MSME should integrate BOP consumers in their operations. BOP consumers possess valuable know-how, skills and capabilities which can enable the long-term success of MSME (London et al., 2010; Simanis and Hart, 2008). $BOP$ consumer integration enables the development of a larger customer base since word-of-mouth is very important in informal settings at the BOP (Bendul et al., 2016). Working together with local people and actors enables deep understanding of local context, constraints and barriers (London, 2007; London and Hart, 2004). This understanding of local structure and systems facilitates the creation of contextualized solutions and value propositions which are more likely to be accepted by BOP consumers (London, 2007; Hart and London, 2005). BOP activities help develop trust, legitimacy and dialogue with local stakeholders which can facilitate resource acquisition and partnerships development (George et al., 2015). BOP participation elements allow for incorporation of the BOP voices into the BOP business models and enable the combination of external knowledge with the expertise at the BOP which can result in novel value propositions (London, 2007). Thus, we hypothesize:

$H3a$: The degree of BOP consumer integration in value chain activities is positively related to economic performance of MSME.

In order to achieve social value, the connection with the local communities needs to be organic part of the business model (Sinkovics et al., 2014). Consumer participation and engagement is needed in order to better understand the local structures and systems and to build up to them (London and Hart, 2004). Understanding BOP as owners of valuable knowledge can enable significant changes in their self-esteem and dignity and also facilitate their access to global knowledge networks (Shivarajan and Srinivasan, 2013). BOP consumers present social and cognitive vulnerabilities and therefore MSME operating in BOP markets can also have unexpected impact such as marginalizing BOP actors, strengthening unequal power relationships (Arnold and Valentin, 2013; Karnani 2007).

In this sense, BOP consumer integration ensures that the local social environment is not disrupted (Munir et al., 2010). By including the BOP into the formal economy as suppliers, customers, employees, social capital is developed, which in turn leads to the socio-economic development of the community (Kahle et al., 2013). The type of business models where consumers are trained and actively involved in the value creation processes create most social value and therefore have most potential for long-term survival and success (Munir et al., 2010). Thus, we hypothesize that:

$H3b$: The degree of BOP consumer integration in value chain activities is
positively related to social performance in the local communities.

Engaging BOP means providing education and training which often results in environmental awareness especially in rural areas (Pansera and Owens, 2015). Duke (2016) found that environmental benefits are most difficult to sell as value proposition at the BOP. However, we argue that by engaging deeply with BOP actors, through knowledge diffusion and capabilities enhancement, an increased awareness and understanding of ecological aspects can be developed, and therefore, BOP markets can be more sensitive to ecological issues. Moreover, engagement with local BOP actors may result in solution approaches not envisioned nor expected for environmental problems (Nahi, 2016). Therefore, we hypothesize:

\( H3c: \) The degree of BOP consumer integration in value chain activities is positively related to ecological performance in the local communities.

Trade-offs: Economic and social / ecological performance

One of the core propositions of the BOP discourse is that social, ecological and economic performances are highly dependent on each other (Hart, 1997; Prahalad & Hart, 2002). The BOP proposition refers to the win-win situation which states that for-profit companies can create social impact while successfully developing markets at the BOP (Hart, 2005). Creating socially responsible value propositions can increase the MSMEs reputation, establish local legitimacy, create social capital and thus contribute to the firm’s financial performance (Klein, 2008). Social value can increase the motivation of employees and customers, which results in increased labour productivity and increased demand, which contribute to the firm performance (Klein, 2008). Shivarajan and Srinivasan (2013) argue that BOPs have immense intellectual capital. Increasing the wellbeing of BOP markets can results in other untapped market potentials. Thus, we hypothesize:

\( H4a: \) The MSMEs social performance in the local community is positively related to the MSMEs economic performance.

The reduced use of scarce resources such as water and energy may reduce the MSMEs operational expenses and thus results in higher financial performance (Klein, 2008; Hart, 2005). Superior ecological value may provide a point of differentiation for the company and thus result in higher profits, larger market-share and higher share-price (Bansal and Roth, 2000). Yet, significant investments are needed for technologies, processes and changes required for higher ecological responsiveness and this may result in losses in the short-run (Hart, 1997). Developing basic products and services for BOP markets is performed through higher resource productivity (off-the-shelf components use, parts easy to repair), supply chain efficiencies and technology (recycling, decreased input resources) which may result in greener products and supply chains and lower operational expenses (Sharma and Iyer, 2012). Sharma and Iyer (2012) put forward the hypothesis that products developed for BOP customers have a lower use of resources, enable supply chain efficiencies and comprise the assembly of locally available technologies, which in turn leads to more affordable, green products and services. Thus, we hypothesize:

\( H4b: \) The MSMEs ecological performance in the local community is positively related to the MSME’s economic performance.

3. Methodology

This section provides a detailed account of data collection procedure, sample description, data screening procedures and items used for
measurement. Firstly, a survey was designed for MSME operating in BOP markets. The survey procedure along with description of the sample is detailed in section 3.1. Secondly, the data analysis process starts with rigorous data screening procedures to explore missing data, outliers, and assumptions of normality, linearity and multicollinearity. In the same subsection (3.2), items employed to operationalize independent, dependent variables, controls and moderators are described.

3.1 Data collection and sample

In order to empirically test the proposed theoretical framework, a survey procedure employing an online questionnaire was adopted. The unit of analysis of the study are MSME operating in BOP markets. Therefore, the online questionnaire targets MSMEs operating in BOP markets and include BOP as suppliers, producers, costumers or consumers (where customers would be the intermediaries – such as retailers, wholesalers, and institutions) and have up to 250 employees. MSMEs can be local or foreign with headquarters in industrialized countries but with small-scale production facilities or local branches in BOP settings. Finally, the MSMEs need to have a profit orientation, or at least intention to be profitable and self-finance growth through retained earnings.

The operationalization of the theoretical framework followed an iterative approach between academic literature sources, practitioners’ literature and expert interviews. Items were mostly adapted from existing empirical studies. In order to identify problems of the survey under development, several rounds of evaluation and feedback of initial file as well as the online version were performed by nine academicians and four practitioners. A pilot study was organized in early August 2016 and the online questionnaire was sent out to 10 respondents who filled it. As a result of this step, adjustments were made related to wording and phrasing. For example, we added specific examples of activities based on the literature for BOP consumer integration in value chain activities in order to guide the respondents better.

The list of enterprises to whom the questionnaire was sent out employs a purposive sampling approach where subjects are selected based on pre-specified criteria (Black, 1999). Databases with case studies of enterprises targeting BOP markets were scanned. The survey was administered between August and November 2016 and was performed in two main steps. In a first step, the online questionnaire was sent out to a database of 722 MSME operating at the BOP (with a total of 623 working emails excluding undeliverable and out of office replies). The survey link was sent out accompanied by an email explaining the background of the study and encouraging participation by promising a report with the final results. We attempted to stimulate participation by sending out also two reminders, two and four weeks after the initial email. The survey procedure was adapted and included reaching out personally to an extended list of 367 enterprises. During this step, a personalized email addressing the founders/directors within the enterprises was sent out with a background of the study. The platforms list and continuously update their website with numerous BOP enterprises from around the world as part of different initiatives related to awards, showcasing best practices and innovations, marketing and investment match-making.

1 We adopt the definition of European Union (2003) which defines MSME as enterprises with less than 250 employees.

2 Examples of such databases include IBA ventures, 2SCALE, SEED, ChangeMakers, Practitioners Hub for Inclusive Business, Siemens Stiftung, Ashden Awards, UNDP, Intellecap Impact Investment Network, USAID, UKAID, AEC Africa, Venture Capital for Africa, Sankalp Awards and Ventures, VCA.
response rate for this approach was of 38% (139/367). Overall, survey responses were recorded from 175 BOP ventures. After excluding incomplete and insufficient quality responses, data screening, the final sample used for this study consisted of 142.

The final sample presents interesting distribution across various characteristics (see Appendix 1). The sample presents a strong focus on Africa and South Asia, young and small mostly free-standing, independent enterprises. The questionnaires were filled in mostly by people with in-depth knowledge of the enterprise, namely 58% by owners, managing directors, founders, executive directors, chairman and 32% by internal managers responsible for IT, marketing, technical issues, regional, project managers. 90% of respondents have been working for the enterprise for more than a year, and 38% more than 5 years. The respondents were asked to describe the product or service they provide and which was then coded according to the classification empirically suggested by Subrahmanyan and Gomez-Arias (2008). 60% of the surveyed enterprises provide basic services for survival such as food, energy, housing, water and sanitation; 26% are classified as ventures providing essential services for safety and security such as healthcare, transportation, finance and education; 7% provide services for social interaction needs such as ICT and market place for labour and the remaining 7% provide beyond basic needs products and services.

We attempted to evaluate the representativeness of the sample by benchmarking our data with existing comparable studies. We did that by looking at industries, type of organization, number of employees, age and location. Sachs (2015) uses World Bank data on poverty and argues that extreme poverty levels are mostly in Central Africa and South Asia (India, Nepal, Pakistan and Bangladesh). The same study citing World Bank data argues that the same level of extreme poverty does not exist in South America. This explains the focus in our sample on Central Africa and South Asia along with limited reach in South America. Klein (2008), de Beule and Verwaal (2014) in their primary data sample of BOP enterprises have mostly free standing enterprises between 10-50 employees, with a definite focus on Central Africa. Our sample is very comparable with theirs, in terms of age, size, type of enterprise and geographical focus (see Appendix 1).

In order to test for non-response bias, we employed the extrapolation approach (Armstrong and Overton, 1977) and compared differences between early and late respondents in terms of profitability and business model stage of the enterprise. With $p>0.05$, we concluded there was not sufficient evidence to suggest the existence of non-bias response.

Additionally, we investigated whether there are significant differences between respondents of standardized and personalized survey method and tested differences between the two samples in terms of several demographic measures, but also model variables (profitability, business model stage, sales growth, economic, social and ecological goals importance, founder’s role and collaboration with MNC). The comparisons did not reveal any differences with all $p>0.05$.

In order to address issues related to single-informant data, we contacted 19 organizations to provide either internal employees or external researchers with intimate knowledge of the enterprise. We received positive feedback from seven cases and calculated the inter-rater agreement scores (two of them based on internal employees and five of them – one internal and one external perspective). Five
cases recorded an excellent interrater reliability (with scores higher than 0.75) and two cases a fair interrater reliability (with scores higher than 0.56) (Chicchetti, 1994). Based on this, we conclude that single informant data is not a major issue for this study.

3.2 Data screening, measures and model

The first step in data analysis consists of rigorous data screening procedures involving missing data, outliers, normality, linearity and multicollinearity. Missing data was not a major issue for this study, with less than 5% missing for each measured item. We employed expectation maximization (EM) algorithm for missing data imputation in SPSS (Byrne, 2016). Boxplots and SPSS outliers’ analysis procedure revealed two extreme outliers and after closer inspection, the two observations were removed due to monotony and unengaged respondent issues. This resulted in our final sample of 142 questionnaires used for final analysis. Since normality is a basic assumption in SEM (Byrne, 2016), data normality was assessed through shape, skewness and kurtosis. Histograms with plotted normal curve, skewness and kurtosis within plus/minus 2.2 range (Sposito et al., 1983) reveal mostly normally distributed data. We tested for linearity between the independent and dependent variables using the deviation from linearity test available in the ANOVA test in SPSS and found no issues there (all p>0.05). We tested for multicollinearity and found no issues there with all VIFs3 less than 3.

The main constructs in the study were measured through perceptual measures with items on 7-points Likert scale. Items were adapted from existing literature and adjusted following several rounds of pre-tests and interviews with with academics and practitioners. For each construct, an exploratory factor analysis (EFA) was conducted to explore uni-dimensionality of constructs and Cronbach’s alpha for internal consistency test. We conducted EFA for each construct by following closely the guidelines of Field (2005) in SPSS v23. The count of items used to measure each construct varied between five and eight. Yet, due to small sample issues, an uniform strategy for data reduction was employed and only the four items with highest loading were selected (please see all final items in Appendix 2). As a result, each construct was measured with four items which follows recommendations of minimum measured variables per each latent variable (Shah and Goldstein, 2006).

Independent variables

Socio-cultural differences construct operationalization is guided by the psychic distance construct from international business studies. Child et al. (2009) developed an assessment of the differences perceived by managers between local and foreign markets and employed 12 dimensions. Although developed and tested empirically on a country level, Puthusserry et al. (2014) recognize that there might be important regional differences within the countries and therefore, perceived differences may also occur between regions within the same country. In this study, we adopt the scale in order to measure the perceived differences between BOP and non-BOP markets who can be foreign (from a different country) or local, but non-local to BOP settings. Therefore, this measure of perceived differences in terms of several dimensions

3 Variable Inflation Factor (VIF) is a measure of multicollinearity which shows how much overlap between the variance explained by the independent variables on the dependent variables. The VIF is calculated for each independent variable in the model using a multivariate regression technique and values below 5 are considered unproblematic (Menard, 1995).
serves as a proxy for socio-cultural differences. Based on the original 12 dimensions, we selected and adjusted six items to BOP settings (following Webb et al., 2010 on the overview of constraints and barriers in BOP markets) six items (see Appendix 2).

In order to measure normative orientation, we adopted and adjusted five items from Turker (2009) who developed a series of perceptual measures for corporate social responsibility based on a survey of the literature and EFA. Additionally, we added two items based on qualitative empirical findings of Gold et al. (2013) to emphasize the importance of top management and employee commitment (see Appendix 2).

Mediators and dependent variables
The intensity of cross-sector collaboration measures to what extent the focal firm engages in collaboration with non-business actors during the various stages of the value chain. This conceptualization based on the different value chain stages is appropriate to multi-sector industry sample because it can capture a wide variety of collaboration practices firms may adopt (Alexiev et al., 2016). For this purpose, we adopted the formulation and four items from Alexiev et al., (2016). Based on expert interviews, practitioners’ reports and BOP empirical findings, we added four extra items denoting non-traditional value chain activities which are predominant in BOP settings (see Appendix 2).

The operationalization for BOP consumer integration construct adopts a value chain perspective inspired from Lau et al. (2010) (see Appendix 2). The literature on consumer integration in operations proposes two main approaches for operationalization: it distinguishes between behavioral features such as the extent to which customers provide/share information, make suggestions and are involved in the decision making (see Chan et al., 2010; Yi and Gong, 2013), and the actual integration of consumers at different stages of the value chain (Lau et al., 2010). The operationalization approach based on value chain integration was adopted for this study for two reasons. The first reason is that this conceptualization is aligned with the current literature which argues that consumer participation in the context of BOP refers to active economic value creation processes where they serve as suppliers, producers, distributors and service providers (Simanis and Hart, 2008). Second reason is that consumer integration in value chain activities requires behavioral participation where consumers share ideas, make suggestions and participate in decision making.

Sustainable performance measures
Sustainable performance is often conceptualized in three dimensions, namely economic, social and ecological (Bocken et al., 2014). In order to measure economic, social and ecological impact, we adopted items from Klein (2008) and De Beule and Verwaal (2014) who build on AtKisson Compass and International Association for Impact Assessment and Environmental Sustainability Index. For social and ecological performance, respondents were asked to specify the degree to which the core operations of their enterprise has a large positive or large negative impact on the communities in which it operate. They were advised to focus on both direct and indirect effects. Both items for social and ecological performance were adjusted for wording, removed where unclear formulation, and combined as a result of the expert interviews and review rounds with academic and practitioners resulting in 11 and 9 items to evaluate social performance and ecological performance (see Appendix 2).
triangulation purposes, we asked respondents whether they employ any measurement approaches for social and ecological impact and found that 56% of surveyed enterprises employ various measurement approaches including standard metrics adopted from internationally recognized bodies, independently set indicators, feedback surveys or impact analyses. Further evidence for strong social and ecological impact of the enterprises in the sample is also the amount of impact awards mentioned by 67% of respondents.

Similar to social and ecological performance, perceptual measures have been used for economic performance. In cases where accounting data may not be available or respondents not willing to share it, perceptual measures are useful and have been shown to correlate highly with accounting measures (Venkatraman and Ramanujam, 1986). Following interviews and expert reviews, one item was removed due to insufficient familiarity with the concept (return on capital invested) and one item with the highest loading was removed due to high correlation between items (overall performance with stability, and sales) (see Appendix 2). In order to better understand the economic performance of the respondent firms, we asked respondents to give an estimation for the profitability (as percentage of total revenue) and sales growth (as percentage) for the last available year.

Controls and moderators

Several additional questions were included in the survey in order to allow to control for age, size and business model stage. For age and size control variables, close-ended questions with possible answers have been used (Neuman, 2014). Enterprise size was measured by the total number of employees, while age was measured in years since the first business transaction was recorded. To incorporate various stages of the enterprise development stages as recommended by the literature, we extended the three stages as suggested by London (2011) (pilot, roll-out and scale), with one last stage, namely mature company. Additionally, we incorporated collaboration with a MNC as a potential mediator by asking respondents whether they work closely, not very close or in early stages, or not at all with a multinational.

Model

In order to estimate the model, SEM approach with maximum likelihood method was employed. SEM is an approach within the General Linear Model that allows to—among others—run confirmatory factor analyses and regression analyses with latent variables as well as with more than one dependent variable. The SEM in AMOS v.23 allows to test whether an a priori hypothesis on patterns of linear relationships among a set of observed and unobserved variables is valid (Shah and Goldstein, 2006). We tested for mediation hypotheses with bootstrapping in AMOS following the causal steps approach of Baron and Kenny (1986) which tests for significance of different paths in order to identify the type of mediation observed. Additionally, we employed user-defined estimand with bootstrapping in AMOS to estimate the indirect effects because more recent literature suggests that mediation is less nuanced and generally if there is a significant indirect effect, then mediation is present (Hayes, 2013). In order to determine whether certain relationships differ for different values of a moderator, multi-group comparisons were performed. The multi-group analysis was performed in AMOS’s built in multi-group function which uses chi-square difference approach (Floh and Treiblmaier, 2006).
4. Results

4.1 Descriptive analysis of the sample – the nature of MSME in BOP markets

Descriptive analyses based on the survey questions show that the sample consists of BOP enterprises driven by a given problem in the local communities, with very strong social orientation formally embedded in the enterprise’s key policy documents mainly driven by the founders. 79% of MSME in our sample include in their key policy documents the strong social mission and goal of contributing to society. While some have a dominant social focus (‘enhancement of livelihoods for rural small scale farmers’), others incorporate both social and ecological aspects and state that the mission is to ‘unlock capital for solar in emerging markets to increase energy access, reduce poverty and cut carbon emissions’. 60% of MSME in our sample provide products and services to satisfy basic needs in local communities and frequently address an imminent problem faced by actors in low-income communities, for example lack of clean water, sanitation, malnutrition, and lack of cooking and heating energy, lack of electricity. Our sample suggests that BOP enterprises are founded to provide solution approaches for issues in BOP markets. 75% of MSME agree that their enterprise was founded to respond to a highly pressing problem in low-income communities. For 97% of the enterprises the founder and his initial vision still have a very important role in shaping the strategic direction of the company. However, we found that most BOP enterprises were indeed driven by entrepreneurs who are foreign to BOP settings (either being foreign or from a developed region within the same country, for example Kathmandu, the capital versus rural villages in the mountains of Nepal). 37% of enterprises still maintain a main office in Western countries (e.g. Germany, Netherlands, United Kingdom and USA). Many of the remaining enterprises entail an external element manifested through various aspects such as foreign founders or executive directors, external collaborations (with universities abroad), employees with education abroad, funding from foreign foundations and development agencies, business mentoring and advising from foreign platforms and BOP hubs.

In terms of collaboration and partnerships, MSME in our sample work closely with NGOs and local non-profit associations, MNC and actively engage BOP consumers in their operations. NGOs and community associations provide support for MSME especially for increasing consumer awareness, education and training provision. Only 24% of MSME collaborate closely with MNC in order to gain financial capital, market insights, increased scalability and capabilities for strategic business development. However, most of these MSME (70%) are either during scaling stage or already mature companies. BOP consumers are integrated mostly during product and service innovation and promotional activities. Descriptive analysis of data for economic performance reveal that actual profitability is rather low, but sales growth, future prospects and customer satisfaction score are very high. This seems reasonable since most ventures are still young and the entire BOP field is not older than 15 years.

4.2 Measurement model

The first step of SEM includes the estimation of measurement models for each construct through confirmatory factor analysis modelling (Byrne, 2008). The results of all seven measurement models conducted through confirmatory factor analysis in AMOS v.23
good fit statistics as recommended by accepted literature. All factor loadings were above 0.4; CMIN/DF below 3 (Carmines and McIver, 1981); incremental fit indices NFI, CFI, TLI, IFI and RFI all above 0.9 (Hu and Bentler, 1998) and acceptable model fit with RMSEA below 0.08 (McCallum et al., 1996) (see Appendix 2). Therefore, the measurement models for all constructs are accepted and the analysis proceeds with the second step in SEM.

4.3 Structural model – hypotheses testing

The second step in SEM is the structural model which was performed in order to explore the proposed set of relationships. The full latent structural model was identified but presented higher degrees of freedom than the sample size (336). Therefore, factor scores were imputed and a path analysis model was conducted (new degree of freedom: 10). Overall goodness of fit indicators and variance fit did not change significantly, with the path analysis model degrees of freedom 10, CMIN/degrees of freedom 1,129; RMSEA 0.03 with pclose 0.604; baseline indicators CFI, TLI, IFI and NFI all above 0.9. The values for the fit indicators suggest that the structural model fits the data well (Byrne, 2008).

The results for the SEM, including explained variance for each endogenous variable, regression estimates and significance values are presented in Figure 2.

In order to test hypotheses H1 and H2, a mediation approach was conducted. We tested for significance of different paths based on Baron and Kenny (1986) approach and found that cross-sector collaboration partially and positively mediates the relationship between normative orientation and BOP consumer integration. Moreover, the mediation effect is significant at p=0.001. Therefore, there is sufficient evidence to accept H1. The same procedures conducted reveal that there is no mediation between socio-cultural differences and consumer integration, with p=0.099, and beta direct effects without mediation significant (p=0.019) and indicating a negative relation (r=-0.19). Empirical evidence suggests that hypothesis H1 is rejected, but there is a significant and negative direct relationship between socio-cultural differences and BOP consumer integration.

The results provide sufficient evidence to accept hypotheses H3a, b and c. As predicted, BOP consumer integration in value chain activities positively and significantly correlates to economic (r=0.315**) and social performance (r=0.397**). This model accounts for almost 16% and 13% of variance in social and economic performance respectively. In support of hypothesis H3c, BOP consumer integration also positively and significantly relates to ecologic performance (r=0.251, p=0.002). Yet, the amount of explained variance for ecologic performance is lower
(R²=0.06). Empirical evidence does not support hypotheses H4a and 4b. Neither *ecologic performance* (p=0.124) nor *social performance* (p=0.243) reinforce *economic performance*. In order to explore in-depth the relationship between the three sustainability performance dimensions, Pearson correlation coefficient are calculated. There is a weak positive relationship between *social and economic performance* with Pearson correlation coefficient 0.21, at p=0.021. With regard to economic and ecological performance, the correlation coefficient is negative 0.034 with p>0.05. Therefore, our data and model support hypothesis H3a, b and c, but do not provide sufficient support for hypotheses H4a and b.

4.4 Sensitivity analysis: controls and moderators

The model fit, main hypotheses regression coefficients and p values as well as mediation effects do not change significantly when controlled for size, age and business model stage. However, the model with three control variables accounts for more explained variance with 12% for *cross-sector collaboration*, 30% *BOP consumer integration* and 23% *economic performance*. This may be due to significant and strong relationship between size and economic performance (r=0.175, p=0.005), business model stage and economic performance (r=0.324, p=0.008).

In order to explore whether hypotheses are affected by further moderators, multi-group analysis were performed. Firstly, two groups based on geographical locations provided by respondents were formed. The multi-group analysis between 45 Asian ventures and 45 African ventures reveal no significant differences at group level (p>0.05). Secondly, we formed three groups of enterprises depending on the degree of collaboration with a MNC. As a result, the multi-group analysis was conducted between 35 enterprises with strong ongoing collaboration, 68 enterprises with weak or early stages collaboration and 39 enterprises with no collaboration at all. The model is different at group level with p=0.004 and therefore, individual paths were tested and several insights emerge (see Appendix 3). With a p=0.001, direct effects between normative orientation and customer integration are significantly stronger for enterprises with strong MNC ongoing collaboration (r=0.62). At a p=0.007, direct effects between cross-sector collaboration and customer integration are significantly stronger for enterprises with weak MNC collaboration (r=0.60). These effects are reinforced also by very high variance explained for endogenous variable consumer integration, with R²=0.45 for strong MNC collaboration and R²=0.41 for weak MNC collaboration. The multi-group analysis based on MNC collaboration shows that H4a and H4b are significantly different for the different models with p=0.043 and p=0.033, respectively. With 32% of variance explained for economic performance, social performance significantly and positively affects economic performance (r=0.36) and ecologic performance significantly and negatively affects economic performance (r=0.403) for enterprises which do not hold any collaboration with MNC. We conclude that economic performance in the context of MSME is also caused by size and business model development stage and MNC collaboration has a strong impact on the MSME’s collaboration with cross-sector partners and sustainable performance.

5. Discussion

This study makes an important contribution for the debate on sustainable business in BOP markets by empirically testing a set of
hypotheses backed up by conceptual and qualitative studies in the literature. The findings provide empirical support, but also counter-evidence for existing theoretical debates and open interesting avenues for further research.

The nature of MSME operating in BOP markets
An important contribution of this study is to unravel the nature of MSME operating in BOP markets on a larger scale. We find that BOP enterprises share similar defining characteristics. Firstly, our findings are congruent with recent literature which suggests that value creation in BOP settings combines elements of ecological constraints and social value (Pansera and Owen, 2015; Sinkovics et al., 2014). Secondly, most enterprises were founded to respond to problems faced by local communities. This insight provides further empirical evidence for the findings of Sinkovics et al. (2014) who found that the ‘social mission’ of BOP firms often appears rather as a salient feature where the reason for the enterprise is to overcome a deeply impacting local constraint. The fact that most ventures were founded to respond to a highly pressing problem in the BOP community reinforces the idea that the raison d’etre of BOP enterprises is to overcome ‘trigger constraints’ (Sinkovics et al., 2014), institutional failures and environmental constraints (Pansera and Owen, 2015). Moreover, offering affordable basic products and services such as clean water, sanitation, nutritious food and clean energy as we found in our sample determines social value creation in itself by increasing the standard of living of BOP populations. These characteristics determine our sample to fit into one typology of social entrepreneurship models which pursue poverty alleviation social missions while engaging in commercial activities (Mair et al., 2012). Literature suggests that such organizations face significant challenges to scale while balancing between social/ecological and economic goals (Doherty et al., 2014). Thirdly, as suggested by literature (e.g. Sinkovics et al., 2014), we find solid evidence that founders have a very important role in shaping and defining the strategic direction of BOP enterprises. Similarly, Hart et al. (2016) suggest that BOP businesses are driven by entrepreneurs motivated to address a combination of social and economic issues. Yet, while Hart et al. (2016) suggest that these founders directly experience the issues their enterprises attempt to solve and are locally embedded in BOP markets, our sample consists of enterprises driven mostly by founders foreign to BOP settings. BOP enterprises in our sample had a clear ‘external participation’ element (London, 2007). This shows that MSME in BOP markets connect formal with informal actors and combine global knowledge and local experiences in order to develop fully contextualized solutions (Hart and London, 2005).

Drivers and mediators: Normative orientation and socio-cultural differences mediated by cross-sector collaboration
Our findings do not provide sufficient evidence to support hypothesis H1. Cross-sector partners do not mediate the relationship between socio-cultural differences in BOP settings and BOP integration in value chain. Current literature suggests enterprises engage BOP actors in value chain activities in order to overcome information asymmetries. In contrast, we found that localized enterprises with low perceived socio-cultural differences engage more deeply BOP in value chain activities than foreign enterprises. After a closer look into the data, we find that
enterprises with clear foreign elements (e.g., foreign founder or foreign headquarter) perceived low differences between them and BOP settings which is somehow unexpected. While surprising, this finding reinforces the idea that engaging BOP consumers poses important challenges and in order to overcome them, local knowledge and strong normative orientation is needed (Pansera and Owen, 2015).

Our data provide evidence to accept hypothesis H2. Empirical findings suggest that cross sector partnerships serve as a partial mediator between normative orientation and BOP involvement in value chain activities. As suggested by literature, we found that overcoming barriers in BOP markets requires social orientation and commitment to societal development from the MSMEs’ side (Hall et al., 2012; London, 2007). The multi-group analysis reveals that for enterprises with strong ongoing collaboration with MNC, the relationship between normative orientation and BOP integration in value chain is significantly stronger. This means that MSME engage in collaborations with MNC or cross-sector actors, but not both groups simultaneously. One reason for this could be that MNC and cross-sector actors have different functioning logics and motivations. While MNC have a clear economic logic, cross-sector partners entail strong orientation towards social good and community development. Consequently, engaging in close collaboration with both MNC and cross-sector partners may be challenging for MSME since effective partnerships require alignment of goals and objectives (Le Ber and Branzei, 2010). Moreover, for MSME collaborating closely with MNC might be a change of functions in that the intermediary role is undertaken by the BOP enterprises which mediates the relationship between MNC and BOP markets as found in some cases by Seelos and Mair (2007).

Key mechanism for sustainable performance: BOP integration in operations

Our findings provide solid empirical support for hypothesis H3a, b and c and show that integrating BOP consumers in economic activities across the different stages of the value chain improved economic performance for MSME as well as social and ecological performance in the local communities. We conclude that perceiving BOP actors only as consumers of affordable products and services is not sufficient to drive sustainable performance. BOP actors need to be engaged as active creators of economic value as producers, suppliers, distributors and this is key for sustainable performance in BOP markets. Therefore, we provide empirical support for theoretical claim debated in the literature. Our empirical finding that BOP consumer integration drives sustainable performance is supported by arguments from the literature. Firstly, active involvement in value creation activities targets directly one of the main root causes of poverty alleviation and provides local BOP with more confidence, voice and skills (Munir et al., 2010; Kolk et al., 2013; Simanis and Hart, 2008) enabling them to drive social change and challenge existing structural drivers of poverty (Nahi, 2016). Therefore, the actual integration in value chain activities drives poverty alleviation rather than provision of affordable products and services (Nahi, 2016). Actual value chain integration leads to enhancement of human capabilities and therefore poverty alleviation according to the capabilities approach of Sen (1999) where poverty is seen as the lack of such capabilities. Secondly, Arnold and Valentin (2013) suggest
that there is a fine line between empowerment and exploitation. Therefore, by integrating local people in value creation activities, BOP ventures can create significant societal impact and avoid exploitation issues. Integrating social aspects and involving BOP customers into supply chains facilitate the development of BOP markets in developing countries while creating significant economic value for all actors across the value chain, especially for the initiators - MNC, local entrepreneurs or local companies (Bendul et al., 2016). Similar to Bendul et al. (2016), we found that BOP consumers are engaged actively during the distribution and promotional stages of the value chains. This study also contributes to the debate on inclusive growth and development which argues that actively involving the local BOP actors in value creation activities enables increased income, higher skills and expertise, access to technology, increased productivity and access to affordable products and services (Knorringa et al., 2016; George et al, 2012).

In addition, sensitivity analysis shows that economic performance of MSME depends also on size and business model stage. This findings is aligned with arguments in the literature which suggests that due to low margins and high cost of operation in BOP markets, size and scalability is needed to ensure economic performance (Prahalad, 2005). Moreover, we found support for the proposition that MNC can support scaling processes of MSME as found in some empirical studies (Seelos and Mair, 2007).

Economic, social and ecological performance – tradeoffs or synergies?

The hypotheses related to trade-offs between social-economic and ecological-economic performance (H4a and b) have not been supported by the analysis. However, in the overall sample, positive correlations show a small positive relationship between social and economic performance. Therefore, we find only limited support for the BOP postulate which emphasizes the idea of social aspects reinforcing economic benefits. As data for economic performance shows, MSME still struggle to combine social objectives with economic goals, but there is significant potential for future growth and societal impact. Groups’ analyses reveal that for enterprises with no ongoing collaboration with MNC, social performance strongly reinforces economic performance, while ecological performance negatively affects economic performance. The major differences between the main groups of MSME according to the level of collaboration with MNC indicates that collaboration with MNC is a key ingredient for sustainable growth and scalability of BOP enterprises. These findings related to trade-offs between sustainable performance dimensions align with de Beule and Verwaal (2014) who found social impact to positively affect economic performance, while ecological impact to negatively affect economic performance. Duke (2016) suggests that in BOP settings it is much easier to connect value propositions with social aspects because social aspects are much more observable, benefit individuals and are more immediate. In contracts, ecological benefits often remain invisible for local communities’ immediate benefits, take longer time to materialize and accrue rather at system level. This may explain why there seems to be either no connection at all (or strongly negative) between economic and ecological performance.

Additionally, groups’ analysis reveals that some enterprises present positive spill-over effects between social-economic and ecological-economic, while others negative and therefore the overall effect in the large sample balances out. This means that there are enterprises facing
significant trade-offs while others synergies between the three dimensions of sustainable performance. Traditional perspectives on sustainable development perceive the interdependencies between the three dimensions and Sachs (2015) criticizes this rather pessimistic view and suggests perceiving interdependencies as synergies. ‘Reducing tradeoffs’ is not the same as ‘increasing synergies’ because the idea of balancing trade-offs implies transferring value, while the concept of synergies suggests identification of novel combinations of value creation which may be increased together (Tantalo and Priem, 2014). Sampling out typologies of BOP enterprises in terms of the nature of the interdependencies they face is important because it can enable a better understanding of drivers affecting negative trade-offs and transfer of best practices from managing the interdependencies as synergies.

6. Conclusion

Theoretical and practical implications

From a theoretical perspective, this study provides empirical support for a long standing and acclaimed proposition that engaging BOP actors leads to sustainable performance. The study also finds that cross-sector partners partially mediate the relationship between normative orientation and BOP engagement in value chain activities. In contrast to conceptual arguments in the literature, empirical evidence suggests that enterprises do not engage BOP in value chain activities to overcome information asymmetries. Moreover, the study highlights distinct characteristics of BOP enterprises which align with the description of what the literature calls ‘hybrid enterprises’ (see Battilana and Dorado, 2010). Therefore, BOP enterprises can be further explored through the theoretical lens of hybrid enterprises, especially in terms of challenges and strategies for sustainable scaling and balancing conflicting goals.

From a managerial perspective, the study has important implications for key stakeholder groups in the sustainable business in BOP landscape. The education of future sustainability leaders is crucial to drive the sustainability agenda across networks and ecosystems (Stubbs and Cocklin, 2008). Therefore, in order to drive the sustainability agenda, there is need for more education, awareness, role models and inspiring leaders. BOP enterprises may lead to more responsible leaders in developing countries who are genuinely interested in improving the social and ecological aspects of their operations. MSME at the BOP can serve as inspiration and role models for larger private sector actors to engage in BOP markets and sustainability efforts (Prabhu and Jain, 2015). From a MNC perspective, working together with these local MSME, supporting their strategic growth and scaling of economic and social impact can be regarded as a win-win for both parties. MNC have strong strategic capabilities, financial resources and international market knowledge, but suffer from the liability of ‘outsidership’ (Johanson and Vahlne, 2009). Building on the networks and systems developed by MSME operating at the BOP and support their growth and social impact is one way MNC can strengthen their sustainability agendas (Seelos and Mair, 2007). From the perspective of development agencies, platforms, hubs and networks targeting BOP enterprises, there is need for targeted policies and support programs for enterprises at different stages of development and strengthen the links between MNC, impact investors and MSMS at the BOP.

Limitations and research outlook
The findings highlighted in this study need to be evaluated in the light of the inherent limitations related to the research design. Yet, these limitations also open interesting avenues for further research and therefore a research agenda is suggested to further evolve the debate and unravel interesting aspects. Firstly, the sample has a bias towards social oriented, young ventures. This is because of the selection procedure employed which was pragmatic, and numerous difficulties were encountered during the data collection process. The selection procedure may have also determined the sample to have a focus on Africa and Asia. Further research should explore other key geographical regions with extreme poverty levels (e.g. Eastern Europe). Furthermore, surveys focused on specific regions or countries where more objective data on socio-cultural settings can be obtained may be very useful to understand issues raised by this study. Secondly, switching to a different data collection method during the study is considered to diminish data quality and produce socially desirable answers (Wagner and Kemmerling, 2010). In order to account for this, we tested for differences between the two samples and did not find any significant differences. However, there is need for further empirical studies in the BOP arena to solidify the current findings and advance theory building. Thirdly, employing cross-sectional design does not imply causality and certain constructs within this study such as BOP engagement and sustainable performance have dynamic nature and thus require a longitudinal approach. Longitudinal studies and in-depth analysis of ventures with positive trade-offs and negative trade-offs are needed to better understand strategies and approaches. Preliminary evidence in trade-offs between social-economic and ecological-economic performance suggests that scholars need to further differentiate between enterprises with negative interdependencies and positive spillover effects in order to understand drivers and transfer best practices between the two groups. Longitudinal analysis of such ventures and how they develop over time in terms orientation and performance are critical to expand our understanding of pursuing multiple goals and the link to sustainable performance. The strong social performance of the enterprises in our sample is probably not surprising given the strong social orientation and early stages of development for most cases. The interesting aspects are how this will change in the next years.

Further research should also explore challenges, standards/regulations, barriers and exploitation risks related to inclusion of BOP in value chain activities (Arnold and Valentin, 2013). Our findings suggest that there is need for further in-depth longitudinal research in order to investigate how BOP consumer integration is performed in low-income settings and to what extent the involvement of BOP customers in supply chains is knowledge-driven and empowers the local actors in the long run. In this sense, current literature can be significantly enriched by studies from the perspective of BOP actors. We know that engaging the local communities into value chain activities requires exceeding organizational boundaries and developing new capabilities and skills. Yet, it is still not clear which sets of skills are and capabilities are needed to successfully involve the BOP actors in value chain activities. In order to unravel the role of MNC for the BOP debate, further research should perform comparative studies between MSME working closely with MNC and not working and understanding the impact on performance, stakeholder network and orientation of the company.
References


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De Beule, F., & Verwaal, E. (2014, October). Does the quality of institutions impact the profit motive to do good for the poor? A contingent resource-based view on inclusive strategies at the “base of the pyramid”. In *Technology: Corporate and Social Dimensions* (pp. 357-388).


Chapter 4


Seelos, C., & Mair, J. (2007). Profitable business models and market creation in the


Appendices
Appendix 1: Sample description

Type of Enterprise, N=143 (in %)

- Free standing enterprise: 10%
- Part of a foundation (that is self-sustained): 6%
- Partnership / cooperation: 5%
- Division of a larger firm: 4%
- Enterprise owned by a large holding company: 3%
- Others: 5%

Location of BOP SMEs, N=144 (Local branches) (in %)

- Africa: 41%
- Asia: 34%
- Central and South America: 15%
- Others (Eastern Europe, Global reach): 10%

Size, Number of employees (in %)

- Less than 10: 14%
- Between 11 and 25: 9%
- Between 26 and 50: 8%
- Between 51 and 100: 13%
- Between 101 and 250: 5%
- More than 250: 38%
## Appendix 2: Measurement items, validity and reliability assessment

### Construct: Socio-Cultural Differences
Cronbach’s Alpha=0.897.

Please rate how different is the sociocultural environment between your target market and your enterprise's local branch for each of the following dimensions:

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Education</td>
<td>0.83</td>
</tr>
<tr>
<td>2. Economic and technological development</td>
<td>0.96</td>
</tr>
<tr>
<td>3. Logistics and infrastructure</td>
<td>0.80</td>
</tr>
<tr>
<td>4. Regulatory system</td>
<td>0.66</td>
</tr>
</tbody>
</table>

**Overall model fit:** \( \text{CMIN/DF}=1.915; \text{RMSEA}=0.08; \text{CFI, TLI, IFI, RFI, NFI} > 0.98. \)

1All items adapted from Puthusserry et al. (2014), based on Child et al. (2009).

### Construct: Normative Orientation
Cronbach’s Alpha=0.897.

1. Our enterprise targets sustainable growth which considers future generations\(^1\). 0.70
2. Our enterprise emphasizes the importance of its social responsibilities to the society\(^1\). 0.91
3. Our top management team has a strong sense of commitment to social good\(^2\). 0.76
4. Our employees have a collective vision of achieving positive social change\(^2\). 0.58

**Overall model fit:** \( \text{CMIN/DF}=0.069; \text{RMSEA}=0; \text{CFI, TLI, IFI, RFI, NFI} > 0.99. \)

1Items based on Turker (2009).
2Items developed based on empirical findings of Gold et al. (2013).

### Construct: Cross-Sector Collaboration
Cronbach’s Alpha=0.811.

In the past three years, your enterprise has worked together with non-profit actors in the following activities...

<table>
<thead>
<tr>
<th>Activity</th>
<th>Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Joint promotional activities for new products and/or services(^1)</td>
<td>0.46</td>
</tr>
<tr>
<td>2. New products and/or services introduction to the market(^1)</td>
<td>0.93</td>
</tr>
<tr>
<td>3. Product and/or service innovations(^1).</td>
<td>0.83</td>
</tr>
<tr>
<td>4. Create a new market for a product and/or service for low income consumers(^2).</td>
<td>0.58</td>
</tr>
</tbody>
</table>

**Overall model fit:** \( \text{CMIN/DF}=0.366; \text{RMSEA}=0; \text{CFI, TLI, IFI, RFI, NFI} > 0.99. \)

1Items based on Alexiev et al. (2016).
2Items developed based on literature and practitioners reports.

### Construct: Consumer Integration
Cronbach’s Alpha=0.764.

1. Our enterprise performs joint product/service innovation with consumers (e.g. regular meetings, workshops)\(^1\). 0.64
2. Our enterprise performs joint product and service provision activities with consumers (e.g. local actors employment)\(^3\). 0.63
3. Our enterprise performs joint distribution, customer service and return activities with consumers (e.g. door-to-door deliveries)\(^1\). 0.63
4. Our enterprise performs joint promotional activities with consumers (e.g. local training)\(^1\). 0.79
### Appendix 3: Multi-group analysis results

<table>
<thead>
<tr>
<th>Path</th>
<th>P-Value</th>
<th>Standardized Regression Estimate</th>
<th>( R^2 ) for Endogenous Variable</th>
</tr>
</thead>
</table>
| Normative Orientation \( \rightarrow \) Consumer Integration | 0.001 | Group 1: 0.62  
Group 2: 0.07  
Group 3: 0.36 | Group 1: 0.45  
Group 2: 0.41  
Group 3: 0.16 |
| Cross-Sector Collaboration \( \rightarrow \) Consumer Integration | 0.007 | Group 1: 0.19  
**Group 2: 0.60**  
Group 3: 0.10 | |
| Social P. \( \rightarrow \) Economic P. | 0.043 | Group 1: -0.12  
Group 2: -0.05 | Group 1: 0.19  
Group 2: 0.15 |

\(^{1}\)Item based on literature and practitioners reports, but formulation and format inspired from Lau et al. (2010).

\(^{2}\)Item based on Lau et al. (2010).

**Construct: Economic Performance\(^{1}\)**, Cronbach’s Alpha=0.770.

Please rank your organization’s economic performance compared to similar organizations in your industry in the low-income market using the following criteria:

| 1. Sales growth | 0.68 |
| 2. Profitability | 0.80 |
| 3. Financial stability | 0.78 |
| 4. Future prospects | 0.45 |

Overall model fit: CMIN/DF=0.179; RMSEA =0; CFI, TLI, IFI, RFI, NFI > 0.99.

\(^{1}\)Item based on Klein (2008), de Beule and Verwaal (2014).

**Construct: Social Performance\(^{1}\)**, Cronbach’s Alpha=0.760.

Please indicate the degree to which your organization has a positive or negative impact on the communities in which it operates within the areas below.

| 1. Availability of good regular education and/or health education | 0.93 |
| 2. Participation of people in political decision making | 0.50 |
| 3. Availability of good healthcare services and products | 0.65 |
| 4. Discrimination and human rights | 0.60 |

Overall model fit: CMIN/DF=0.337; RMSEA =0; CFI, TLI, IFI, RFI, NFI > 0.98.

\(^{1}\)Item based on Klein (2008), de Beule and Verwaal (2014).

**Construct: Ecological Performance\(^{1}\)**, Cronbach’s Alpha=0.852.

Please indicate the degree to which your organization has a positive or negative impact on the communities in which it operates within the areas below.

| 1. Air quality | 0.90 |
| 2. Amount of energy use within the value chain, including customers | 0.77 |
| 3. Amount of toxic discharges to the environment | 0.78 |
| 4. Amount of overall material use | 0.64 |

Overall model fit: CMIN/DF=0.446; RMSEA =0; CFI, TLI, IFI, RFI, NFI > 0.99.

\(^{1}\)Items based on Klein (2008), de Beule and Verwaal (2014).
<table>
<thead>
<tr>
<th>Ecological P. → Economic P.</th>
<th>Group 3: 0.36</th>
<th>Group 3: 0.32</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.033</td>
<td>Group 1: -0.218</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group 2: 0.039</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Group 3: -0.403</strong></td>
</tr>
</tbody>
</table>
Chapter 5:

Paper 4 - Typologies of Base of the Pyramid Enterprises: A cluster analysis with regard to performance outcomes

Authors: E. Rosca, A. Rijal, J. Bendul

Contribution of E. Rosca to the work: Conducted the literature review, prepared the data for the cluster analysis (including coding of themes and BOP models), conducted all post-hoc analyses to profile the clusters and evaluate sustainable performance and wrote all sections.

Contribution of the co-authors: Both A. Rijal and J. Bendul helped streamline the manuscript, contribute to interpret and discuss the results. A. Rijal conducted stage 2 and parts of stage 3 of the cluster analysis, namely determining the number of clusters and validity analysis through ANOVA and discriminant analysis.

Contribution of paper to PhD project:

This paper conducts a cluster analysis in order to develop meaningful typologies of MSMEs operating in BOP markets and employs post-hoc techniques to evaluate relationships between the typologies and their economic, social and ecological performance. This study follows up on several insights gained from the previous research stages. Firstly, it adopts the perspective of MSME and provides a fine-grained view into the different types of MSMEs operating in BOP markets in regard to their pursued goals, key partners, BOP models and themes. Secondly, it follows up on insights gained from the hypotheses testing phase which suggests that MSMEs at the BOP entail very strong, formally embedded normative orientation and attempt to combine goals of profitability with social and ecological objectives. For this purpose, this study draws
insights from research streams on organizations pursuing multiple goals and social entrepreneurship. The study reveals six typologies of MSME which distinguish themselves in regard to key partners, pursues goals, BOP supplier/consumer models and themes. This study uses insights gained from previous research stages and fulfils the descriptive research objective of developing typologies of BOP enterprises. From an analytical perspective, the study explores relationships between the typologies and economic, social and ecological performance in order to analyse how pursuing multiple goals affects sustainable performance. This paper is instrumental in fulfilling the pragmatic goals of the thesis since it provides a nuanced picture of MSME and their inherent features. This understanding of typologies and their relationships to performance facilitates the development of specific recommendations and set of priorities for different types of MSME and implications for other relevant stakeholders. Moreover, the typology enables the creation of a matrix for activities for different groups of stakeholders in order to map the main areas of interest for practitioners.
Typologies of Base of the Pyramid Enterprises: A cluster analysis with regard to performance outcomes

Abstract
An increasing number of micro, small and medium sized enterprises operating in the Base of the Pyramid markets offer encouraging prospects to issues of poverty alleviation, social development and environmental protection. These enterprises often combine elements of traditional private enterprises with strong social missions. However, the characteristics, the nature of pursued goals and especially the relationships to performance outcomes of these enterprises are poorly understood. The study systematically categorizes micro, small and medium sized enterprises operating in Base of the Pyramid markets in order to identify meaningful typologies. We conduct a cluster analysis using primary data collected via a large scale survey. The cluster analysis reveals six typologies, namely energy for urban consumers (1), technology (2), basic needs (3), education, training and employment for rural consumers (4), education, training and employment supplier model (5) and energy for rural consumers (6). The clusters distinguish themselves in regard to the (combination of) goals pursued, key partners, themes and key beneficiaries. The validity of the solution is further tested by exploring relationships between clusters and performance measures. We find that enterprises providing educational services to rural consumers pursue triple bottom line goals and distinguish themselves from the other typologies through better economic, ecological and social performance. Moreover, our findings suggest that pursuing social or ecological goals does not always translate in social or respectively ecological performance. Similarly, a weak focus on social or ecological goals does not inherently mean weak performance on these areas.

Keywords: Base of the Pyramid, multiple goals, social performance, ecological performance

1. Introduction
The BOP narrative started in the early 2000s with the seminal articles of Prahalad and Hammond (2002) and Prahalad and Hart (2002) which highlighted the untapped market potential of the largest socio-economic segment in the global income pyramid, namely the Base of the Pyramid (BOP). BOP is defined as the largest group of global population where the majority of economic transactions are performed outside the formal economy (London et al., 2014). The main BOP argument was targeted towards multinational companies (MNC) and suggested that there is a fortune to be discovered in the low-income consumer markets. Additionally, Prahalad and Hart (2002) suggested that MNC can effectively fight poverty by providing affordable goods and products for BOP consumers. Although this initial idea was adopted by several MNC who successfully developed products and services for the BOP (e.g. Siemens, General
Electric, Unilever), recent empirical work suggests that most MNC cannot overcome the corporate social responsibility mindset and face significant challenges to develop economically viable solutions for the BOP markets (Levänen et al., 2015).

Local and foreign-driven micro, small and medium sized enterprises (MSMEs) operating in BOP markets seem to have a strong impact on poverty alleviation. In contrast to MNCs, MSMEs focus on local capacity building and empowerment of social minorities and marginalized low-income population (Pansera and Sarkar, 2016; Levänen et al., 2015). However, MSMEs operating in BOP markets face several challenges critical for their long-term survival. Firstly, MSME in these markets often start with a strong social mission and a given problem in a local community (e.g. lack of clean water, sanitation, clean energy) and attempt to develop a viable business model to ensure economic self-sufficiency (Sinkovics et al., 2014). Secondly, MSME operating in BOP markets find it difficult to acquire resources, in particular capital, and face difficulties to each scalability. Achieving scalability is critical for long-term survival in BOP markets because of the low margins inherent to affordable products (London and Hart, 2011). Nevertheless, numerous awards and incubator programs targeting initiatives in BOP markets such as the United Nations driven SEED Awards program, Sankalp Forum in the Indian sub-continent and Inclusive Business Accelerator in the Netherlands show that there are sufficient MSME which successfully drive social change while being self-sufficient. Existing literature provides several insightful case studies on successful MSME driving social and ecological impact. However, there is very little understanding of pursued goals, organizational attributes, and performance outcomes of such MSME, and if MSME with certain industry focus, organizational attributes and pursued goals are likely to lead to better or worse economic, social and ecological performance.

This study aims to fill in this gap and develop meaningful typologies of BOP enterprises and evaluate their economic, social, and ecological performance. The first objective of this study is to systematically categorize BOP enterprises in order to identify meaningful configurations. The second objective is to explore relationships between the different typologies and economic, social and ecological performance outcomes. In order to achieve this, we conduct a large scale empirical study. A rich data set of 146 MSMEs is used to develop typologies through a cluster analysis. Post-hoc techniques for comparing means between groups are employed to explore relationship between typologies and economic, social and ecological performance of MSMEs. Management scholars have a long-standing tradition of employing cluster analysis to identify meaningful organizational typologies as ‘‘firms that share a common profile along conceptually distinct variables’’ (Ketchen and Shook, 1996, pg. 441). The typologies of BOP enterprises found in this study guide recommendations for further research and inform managerial implications.

This paper is structured in five sections. After this introduction, in Section 2, a review of the literature with focus on typologies of enterprises pursuing multiple goals at the BOP and key issues they face in order to identify variables for the cluster analysis. Section 3 describes the data collection, characteristics of the sample and steps undertaken for the cluster analysis. Section 4 profiles the six clusters of BOP enterprises with emphasis on their characteristics and reveals insights in regard to relationships between the clusters and performance dimensions. The paper concludes with a discussion of the theoretical
contributions of this study, practical implications and further research ideas.

2. Literature Review

This section draws insights from two relevant research streams, namely organizations pursuing multiple goals and BOP research. By definition of the BOP proposition of combining profit with poverty alleviation, MSMEs in BOP market pursue at least economic and social goals. In order to understand the nature and challenges faced by enterprises which attempt to combine economic with social/ecological goals, we draw on the research streams of organizations pursuing multiple goals. We review existing typologies of enterprises which pursue different goals in order to compare and contrast the typology developed in this study. Finally, we review the literature to identify key criteria for analysis and characterization of MSMEs in BOP markets.

The nature of organizations pursuing multiple goals

The existence of organizations with demands imposed by pursuing multiple goals and challenges associated with them have been mentioned in earlier research (see for example Scott, 1994). The debate on these organizations has been revived in the past decade in the context of emergence of the social enterprise phenomenon. Social enterprises are organizations which leverage economic activity to pursue social missions and achieve social transformations (Zahra et al., 2009; Mair and Marti, 2009). Social enterprises provide goods and services similar to traditional organizations, but their business operations are only meant to support activities for their social interventions (Mair et al., 2012). These new types of organizational models emerge as the result of evolutionary development and paradigm shift of “marketization of the non-profit sector” (Doherty et al., 2014). On the one hand, they aim to generate internal revenue, and on the other hand, they borrow social objectives from traditional non-profit organizations such as poverty reduction, promotion of equality and reduction of unemployment (Doherty et al., 2014). By pursuing multiple objectives and by combining different organizational logics, these enterprises are by definition “sites of contradiction, contestation and conflict” (Doherty et al., 2014, pg. 425). As a result, compared to traditional enterprises which solely pursue economic goals, organizations pursuing multiple goals face challenges related to mission drift (Battilana and Dorado, 2010), stakeholder perceptions of illegitimacy and reduced access to resources (Austin et al.,
Empirical findings have shown that pursuing multiple goals can create internal tensions within organizations and may trigger conflicts between organizational members (Zilber, 2002). Internal tensions resulting from pursuing different objectives (Battilana and Dorado, 2010; Zahra et al., 2009) can impact critical decisions on resource acquisition and allocation, partner selection and projects prioritization. Therefore, there is increasing skepticism about the long-term survival, sustainability and scalability of such enterprises (Battilana and Dorado, 2010).

**Typologies of enterprises pursuing multiple goals**

There are several notable studies attempting to develop typologies of enterprises pursuing multiple goals. Neck et al. (2009) employ missions and outcomes as main firm dimensions and attempt to categorize social entrepreneurship models in social purpose, traditional, social consequences and enterprising nonprofit ventures. The underlying assumption of this framework is that the outcome of an enterprise is rooted in its main purpose (or mission). The mission of a company guides the strategy development processes which in turn guide the operational processes of reaching customers, managing employees and interacting in the marketplace (Andrews, 1971). The typology of enterprises (see Figure 1) suggests that social purpose ventures start from a given social problem, but are for-profit and their market impact is rather economic. Traditional ventures focus on exploiting market opportunities for generating profits. Social consequence ventures are closely aligned with the concept of corporate social responsibility since their operations often entail social outcomes, but they do not have a clear social mission. Enterprising nonprofits have a strong social mission and attempt to drive social change. Hybrid enterprises combine elements from other typologies and pursue multiple objectives.
related to economic, social and ecological aspects.

While Neck et al. (2009) develops the typology based on mission and impact of enterprises, literature proposes also typologies based on the issues they address, for example civic engagement, environment, education, human rights and poverty (Mair et al., 2012). Mair et al. (2012) proposes four main types of enterprises which combine economic activity with societal issues. They find that one type of such enterprises leverage economic capital to bring social change by addressing issues such as poverty, poor working conditions, unemployment and lack of access to markets. Moreover, Mair et al. (2012) argue that this type of enterprises deserve particular attention and further research should investigate under which conditions the organizational models adopted manage to drive social impact while maintaining their operations. Therefore, this study expands current typologies issues by providing a fine-grained picture into organizations which combine economic with social in the context of BOP markets. Moreover, we make a first step towards understanding how effective are the models adopted by different types of enterprises in BOP markets.

Key features of BOP enterprises

BOP enterprises lie at the intersection between two domains - poverty alleviation and business strategy (London et al., 2010). From a poverty alleviation perspective, the proposition is that market-based solutions can be an alternative to donation-based approaches in tackling major global issue such as global poverty (Prahalad, 2006). From a business strategy perspective, companies can see the untapped potential at the BOP as potential business opportunities (London et al., 2010). Based on the literature, we identify four main valuable criteria to describe and classify MSME in BOP markets, namely 1) the nature of goals MSME pursue, 2) the approach adopted towards BOP markets, 3) the key partners and 4) the themes and issues addressed.

BOP enterprises operate in underdeveloped markets and aim to achieve financial self-sufficiency and create significant social and environmental benefits across the BOP community and the broader environment (London et al., 2014). MSME in BOP markets frequently have as starting point a given problem in a local community (e.g. lack of clean water, sanitation, clean energy) and their aim is to address the issue by developing an economically viable business proposition (Sinkovics et al., 2014). A strong social mission is core element of the enterprise’s identity in BOP markets (Sinkovics et al., 2014). In addition to strong focus on social orientation, BOP settings have been known for incubating technologies and business models addressing ecological issues (Duke, 2016; Hart and Christensen, 2002). Numerous BOP scholars have called for enterprises addressing poverty aspects to incorporate ecological goals in their business models since it is often recognized that ecological harm can aggravate poverty conditions (Duke, 2016; Hart et al., 2016). Yet, ecological aspects seem to be very hard to integrate in value propositions targeting BOP consumers mainly because they are rather benefits at system level which take longer to materialize (Duke, 2016; Hart et al., 2016). Often enterprises change the ecological value proposition to account for benefits related to the cost structure and for immediate socio-economic problems (Duke, 2016). Therefore, pursuing economic, social and/or ecological goals is a core component of value creation and
innovation processes for MSMEs in BOP markets.

BOP enterprises can be classified in consumer- or supplier-based models, based on their approach towards BOP as either market to sell goods (consumer approach) or producers to potentially source products (supplier approach) (London et al., 2010). BOP supplier models can source products and services from the BOP farmers and artisans which are usually distributed to high-income markets. BOP consumer models provide products and services directly for BOP markets or for intermediaries such as NGOs, schools, hospitals, retailers, wholesalers, and institutions (who then sell the products/services to BOP consumers). The initial BOP proposition and most empirical research in the field focus on the untapped market opportunity perspective as proposed by Hammond and Prahalad (2004). Yet, more than 50% of BOP in developing world are smallholder farmers and therefore addressing constraints faced by these farmers can have significant impact on poverty alleviation (London et al., 2010). Therefore, the distinction between supplier and consumer models is critical for understanding typologies of BOP enterprises and their impact. Moreover, it regard to consumer models, it is important to distinguish between rural and urban BOP because this may have significant impact on partner selection, type of venture and performance (Kolk et al., 2014; Ireland, 2008).

Literature suggests that partnerships are key to success in BOP markets. There are two groups of partnerships emphasized by the literature. Firstly, there are cross-sector partners such as local NGOs, community associations and knowledge institutions which are known to have knowledge on local systems and structures and legitimacy (Dahan et al., 2010). BOP enterprises often engage in partnerships with local cross-sector partners and leverage their resources and capabilities in order to gain local knowledge, legitimacy and connections with BOP consumers (George et al., 2015; Gold et al., 2013; London et al., 2010; Seelos and Mair, 2007; London and Hart, 2004). Secondly, there are MNC who have resources, capabilities and knowledge for scaling, business development and international expansion and can help BOP enterprises grow their economic and social impact (Seelos and Mair, 2007).

Recent literature findings suggest that there may be significant differences in terms of value creation, innovation and performance outcomes in various sectors (Nahi, 2016). Subrahmanyan and Gomez-Arias (2008) explore consumer behavior in BOP markets depending on the needs, one can distinguish between basic services, safety and security, social interaction and beyond basic needs types of enterprises. Mair et al. (2016) find that themes such as food, housing, civil engagement, technology and health referring to various societal issues addressed by social entrepreneurship are valuable criteria to categorize enterprises.

Therefore, key features of BOP enterprises include 1) the nature of goals MSME pursue, 2) the approach adopted towards BOP markets, 3) the key partners and 4) the themes and issues addressed. These criteria are used to classify and create meaningful typologies of BOP enterprises in this study. Moreover, since the overarching aim of these enterprises is to become economically viable and simultaneously drive social and ecological performance in local communities, this study explores performance of MSMEs in BOP along three performance dimensions, economic, social and ecological. We define economic performance as the ability of the enterprises to finance its operations through self-financed growth and its financial success in terms of
profitability and sales growth. Social performance refers to contributions to societal development and well-being of local communities (Rosca et al., 2016). Ecological performance refers to contributions for the environment in terms of resource management, renewable energy, and health of aquatic and terrestrial ecosystems (de Beule and Verwall, 2014).

3. Methods

In order to develop meaningful typologies of MSMEs in BOP, a four stage research design is employed (see Table 1). Stage one encompasses the data collection process and the descriptive analysis of the sample. Additionally, we describe the measures used for the clustering and performance variables. Stage two entails the selection of clustering algorithms and determining the number of clusters. Stage three conducts reliability and validity tests to evaluate the robustness of the obtained cluster solution. Additionally, we employ post-hoc tests in order to identify statistically significant differences between the clusters. Finally, in stage four, we describe additional analysis conducted to explore relationships between the clusters and geography, economic, social and ecological performance.

Stage one: Data collection

The units of analysis for this study are MSMEs in BOP markets. An online questionnaire was designed for this target group of respondents. The selection of respondent enterprises employs a purposive sampling approach where subjects are selected based on pre-specified criteria (Black, 1999). Firstly, the enterprises can have up to 250

<table>
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<tr>
<th>Stage</th>
<th>Objective</th>
<th>Methods</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Data collection</td>
<td>Describe survey procedure: target respondents, response rate and sample description.</td>
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<tr>
<td></td>
<td></td>
<td>Describe measures and questionnaire items for clustering and performance variables</td>
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<tr>
<td>2</td>
<td>Cluster analysis: Determining the number of clusters</td>
<td>Employ cluster analysis techniques to determine the number of clusters.</td>
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<td></td>
<td>Classify all observations into the identified clusters</td>
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<tr>
<td>3</td>
<td>Cluster analysis: Validity and reliability of the solution</td>
<td>Validate the six cluster solution</td>
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<tr>
<td></td>
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<td>Profile the clusters in order to identify key characteristics</td>
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<td>4</td>
<td>Geography and performance evaluation of clusters</td>
<td>Evaluate differences between clusters across geographical regions.</td>
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<td></td>
<td></td>
<td>Evaluate differences in economic, social and ecological performance for the six clusters</td>
</tr>
</tbody>
</table>

Table 1: Four stage research design
employees\(^1\) and can address BOP issues through consumer or supplier models. Secondly, these enterprises can be local or foreign with headquarters in industrialized countries but with small-scale production facilities or local branches in BOP settings. Thirdly, the targeted enterprises need to have a profit orientation, or at least intention to be profitable and self-finance growth through retained earnings. In order to find enterprises which fit these criteria, we screened\(^2\) databases with case studies and online platforms showcasing BOP enterprises. This resulted in a total sample of 1089 enterprises operating in BOP markets across various geographical regions and industries. The survey was administered between August and November 2016 and recorded responses from 175 BOP ventures. After excluding incomplete and insufficient quality responses, the final sample used for this study consists of 146 enterprises.

The final sample presents a representative distribution across various characteristics (see Appendix 3). The sample presents a strong focus on Africa and South Asia, with young, small and mostly free-standing enterprises. The questionnaires were filled in mostly by people with in-depth knowledge of the enterprise, namely 58% by owners, managing directors, founders, executive directors, chairman; and 32% by internal managers responsible for IT, marketing, technical issues, regional, project managers. This suggests that the informants had in-depth knowledge of the enterprise and its activities.

\(^1\) We adopt the definition of European Union (2003) which defines MSME as enterprises with less than 250 employees.

\(^2\) Examples of such databases include IBA ventures, 2SCALE, SEED, Change Makers, Practitioners Hub for Inclusive Busines, Siemens Stiftung, Ashden Awards, UNDP, Intellecap Impact Investment Network, USAID, UKAID, AEC Africa, Venture Capital for Africa, Sankalp Awards and Ventures, VC4A. These platforms list and continuously update their website with numerous BOP enterprises from around the world as part of different initiatives related to awards, showcasing best practices and innovations, marketing and investment match-making.

### Measures

In this study, we employ data from the questionnaire related to the main criteria to describe BOP enterprises (pursued goals, key partners, BOP models and themes), economic, social and ecological performance. The type of data used for all variables is presented in Table 2.

The clustering variable based on the empirical study included four main categories, namely pursued goals, key partners, BOP models and themes (see Appendix 1 for descriptive analysis of the sample according to the clustering variables). Firstly, we address the goals pursued by the enterprises by asking them to rate how important are the three goals for their enterprise (economic, social and ecological). Secondly, we asked them how closely they collaborate with MNCs and to select the cross-sector partner with whom they work most closely from NGOs, community associations, governments and knowledge institutions. Based on the selection of respondents, we create binary data, where 1 indicates that the MSME collaborates closely with that partner and 0 that it does not. Thirdly, we asked for their main customer group, namely rural BOP, urban BOP or intermediaries. The answers and comments respondents recorded to this question allowed us to categorize all enterprises in BOP supplier model, BOP consumer rural or urban and intermediaries’ mode. Similar to the variable partners, we create binary data to indicate the type of model an MSME entails. Fourthly, we asked them to describe the main
Chapter 5

<table>
<thead>
<tr>
<th>Variables</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pursued goals:</strong> Economic, Social and Ecological</td>
<td>Numeric, 7-points Likert scale</td>
</tr>
<tr>
<td><strong>Key partners:</strong> MNC, NGO, community associations, government, knowledge institutions</td>
<td>Binary</td>
</tr>
<tr>
<td><strong>BOP Models:</strong> Urban consumers, rural consumers, supplier model</td>
<td>Binary</td>
</tr>
<tr>
<td><strong>Themes:</strong> Education, training and employment, basic needs, energy, technology, health</td>
<td>Binary</td>
</tr>
<tr>
<td><strong>Geography</strong></td>
<td>Text transformed in categorical (countries given by respondents coded into regions)</td>
</tr>
<tr>
<td><strong>Economic performance</strong></td>
<td>Categorical</td>
</tr>
<tr>
<td><strong>Social and ecological performance</strong></td>
<td>Numeric, 7-points Likert scale</td>
</tr>
</tbody>
</table>

Table 2: Type of data used for variables

product/service they provide and the mission of the enterprise. Based on these two categories, we classify the enterprises in five themes, namely education, training and employment (1), basic needs (2), energy solutions (3), technology (4), health (5). Several enterprises were coded within more than one theme since this was often the case, for example a technological venture addressing healthcare issues and providing energy solutions. The attribute health was dropped from the analysis because it did not satisfy the 10% threshold we employed (Mair et al., 2012; Hambrick et al., 1983).

In order to measure economic, social and ecological performance, a mix of literature and own developed measures were employed. For social and ecological measures, we adopted items from Klein (2008) and De Beule and Verwaal (2014) who build on AtKisson Compass (AtKisson and Hatcher, 2001) and International Association for Impact Assessment and Environmental Sustainability Index (Esty et al., 2005). Respondents were asked to specify the degree to which the core operations of their enterprise have positive or negative impact on the communities in which they operate. All items for social and ecological performance were adjusted for wording, removed where unclear, and combined as a result of the expert interviews and questionnaire review rounds with academic peers and practitioners. This resulted in 11 and 9 final items used to evaluate social performance and ecological performance, respectively. Additionally, Cronbach’s alphas are above 0.8 and thus indicate high reliability and internal consistency of items (see Appendix 2). For economic performance, we asked respondents to give an estimation for the profitability (as percentage of total revenue) and sales growth (as percentage) for the last available year. The survey gave several answer options which ranges of responses (not profitable/constant sales, less than 5%, up to 10%, etc).

**Stage two: Cluster analysis - determining the number of clusters**

This stage describes the employed clustering algorithms and determination of number of clusters (Mair et al., 2012; Ketchen and Shook, 1996; Ketchen et al., 1993). In order to determine the number of clusters, we employ hierarchical cluster analysis using complete linkage method to select appropriate number of clusters. Opposed to Mair et al. (2012), we do not use Ward’s method for hierarchical clustering as we do not expect all clusters to have same number of members. We follow the approach of Mair et al. (2012) to use Calinski
and Harabasz (1974) approach and Duda and Hart (1973) for stopping rules. The approach of Calinski and Harabasz (1974) employs a ratio of total variance between the clusters and total variance within clusters and a large value for the ration shows better more distinct clusters (Mair et al., 2012). The stopping rule proposed by Duda and Hart (1973) employs an approach based on calculation of squared errors. Both approaches employed for stopping rules suggest six clusters solution. Using multiple approaches for determining the number of clusters increases the confidence in our solution approach and overcomes the limitations of using single methods (Ketchen and Shook, 1996). Actual clusters are determined with the k-means clustering method with the centroids determined by the hierarchical cluster analysis. As a result of this stage, the 146 observations are classified in six typologies of BOP enterprises.

**Stage three: Cluster analysis - validity and reliability of the solution**

In order to validate the six cluster solution, we performed discriminant analysis and ANOVA as additional multivariate techniques (Mair et al., 2012; Carter et al., 1994; Hambrick et al., 1983; Kabanoff et al., 1995). ANOVA test of variables across the clusters shows that only one variable is not significantly different (government) across clusters. Using the discriminant analysis with 50% randomly sampled testing and the complementary testing data, 90% of the observations were classified accurately to the cluster it belonged to in the K-means clusters. Therefore, we conclude that the six cluster solution approach is robust and reliable.

We conduct additional analyses in order to explore statistically significant differences between the six clusters. This is necessary in order to profile and understand the key characteristics of each cluster. Multiple pairwise comparisons based on post-hoc tests are employed for this purpose (Tukey\(^3\) or Dunnett T3\(^4\)). The selection of post-hoc test is determined by the result of the Levene's test of homogeneity of variances\(^5\), namely the assumption of equal variances.

**Stage four: Geography and performance evaluation of clusters**

In order to explore relationships between the clusters and geography and performance outcomes, we conduct additional tests with external variables not used in defining the clusters, namely geography, economic, social and ecological performance (Mair et al., 2012). This approach reduces researcher's judgments and biases and thus is regarded as superior (Ketchen and Shook, 1996). Several techniques are employed to explore whether the six clusters are different across geography or performance dimensions. The technique to be used depends on the nature of the data. In this sense, we cross-tabulated the six clusters with geography and two categorical indicators for economic performance and employed Cramer’s V\(^6\) index to assess the strength of association between different variables (see

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3 Tukey test is a post-hoc test conducted for multiple pairwise comparisons in order to identify which means are statistically different from each other.

4 Dunnett T3 multiple pairwise comparisons is a post-hoc test which identifies specific differences between different groups.

5 Levene’s test of homogeneity of variances assesses the assumption that variances of the populations from which different samples are drawn are equal. In this study, this assumption needs to be tested in order to determine the selection of post-hoc techniques.

6 Cramer’s V index is a measure of association between two variables and it results in a value between 0 and 1, where a value closer to 1 translates in higher association.
Table 3). For ecological and social performance, we conduct one-way ANOVA and post-hoc tests in order to assess whether there are statistically significant differences between the groups and identify them (Miller, 1988).

4. Findings

Our findings reveal six clusters of enterprises operating in BOP markets (see Table 3). We name the six clusters based on the themes and consumer/supplier models they entail: 1) energy for urban consumers, 2) technology, 3) basic needs, 4) education, training and employment for rural consumers, 5) education, training and employment supplier model and 6) energy for rural consumers. The clusters distinguish themselves in regard to the (combination of) goals pursued, with several clusters pursuing a clear triple bottom line (1 and 4), high social orientation (1, 4 and 5) and strong ecological orientation (1 and 4). It is noteworthy to mention that the cluster solution includes two clusters in the energy sector distinguishable not only by key beneficiaries (rural or urban consumers) or key partners, but also ecological orientation (cluster 1 with strong and cluster 6 with very weak ecological orientation). In regard to key partners, only three clusters strongly cooperate with MNC (cluster 2, 4, and 6), NGOs and community associations represent close partners for many clusters and knowledge institutions mostly relevant for energy enterprises serving urban consumers. In the next paragraphs, we profile each individual cluster with special focus on key characteristics and typical examples from our sample.

**Cluster 1 – Energy urban:** This cluster consists of ventures in the sector targeting BOP consumers in urban areas while working closely with community associations and knowledge institutions and showing strong social and ecological logic. The focus of these solutions is to cater to urban household needs in terms of electricity generation and cooking fuel, and includes solar solutions, biogas and bio-ethanol solutions. Since in urban areas these solutions are often available, the value proposition of these ventures is either affordability (saved money) or health/ecological related benefits. Typical offerings include organic fertilizers, briquettes, clean cooking fuel, biogas, solar lighting and solar water drinking systems. Their strong ecological orientation is clearly stated in the mission of such enterprises. A typical example is Enterprise A⁷, a private business founded as a response to poverty, energy and environmental challenges in the African continent. The importance of both social and ecological aspects is highlighted in the company mission and in the way the enterprise model is designed. In this sense, this is a pro-poor, environmental-friendly solutions company, which aims to supply households with solid biomass fuel in the form of briquettes and other alternative fuels for cooking and heating.

**Cluster 2 - Technology:** This cluster includes technology-based ventures for various purposes including finance or communication. These enterprises target BOP consumers in both rural and urban areas, work closely with NGOs and community associations and entail strong economic logic. Typical examples in

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⁷ All names for examples of enterprises from the sample have been changed to ensure confidentiality concerns of our study respondents.
this cluster are ventures which provide e-healthcare solutions, online platforms to connect patients with healthcare providers, mobile money and other financial services. Typical example is Enterprise B present in several African countries which provides financial services and mobile money for both urban and rural customers. The main goal is to provide a safe instrument through which people can send money to their families, relatives or business partners. Another example of enterprise in this cluster is Enterprise C which employs high level technology to support farmers in remote areas in Asia to improve their agriculture practices.

Cluster 3 – Basic needs: This cluster includes ventures which follow the traditional consumer-based BOP approach and offer basic needs services including nutritious food products, water, waste services and sanitation. The differences in terms of pursued goals are not statistically significant, but one can observe high averages for economic and social orientation. Since their focus is to reach rural consumers in remote areas and make available much needed products, these enterprises rely extensively on partnerships with local NGOs. Typical example of enterprise in this cluster is Enterprise D in Central America which is a social company committed to providing drinking to rural BOP. Their customers are people in remote areas with no access to clean drinking water and their offering includes a water filter use to remove contaminations from water.

Cluster 4 – Education rural: This cluster focuses on the provision of education, training and employment opportunities for rural consumers. They work closely with local community associations and pursue triple bottom line goals. These enterprises address various aspects related to education, namely health awareness, ecological education and agronomic advice. Several of these enterprises are operating in the agriculture/agri-business sector and they support farmers with information, technologies, input, advice, training, materials and related information all in order to increase farmer’s productivity and/or to educate them on agri-business issues. A typical example of this is the social enterprise Enterprise E in South East Asia which was classified as education and training because they offer many services but their direct goal is to train and increase the incomes and productivity of smallholder farmers. This social enterprise founded more than years ago offers a wide range of services for farmers including irrigation products, farm advisory services, financial services, rural energy, infrastructure and economic research.

Cluster 5 – Education supplier: This cluster includes ventures which follow the supplier-based model where products and services are sources from the BOP producers and commercialized usually to higher income markets. Their aim is to offer education training and employment opportunities for local farmers and artisans while opening access to new markets for their products/services. They often target rural farmers, artisans, fair trade models, women and other actors from disadvantaged groups and source products include cocoa, tea, coffee, garments and peanut butter. They are known to have very strong social orientation and engage closely with NGOs. Typical examples include the social enterprises incubated by a large foundation in South America – Enterprise F. Enterprise F provides local capacity building and numerous inputs to farmers producing cocoa and support them to improve the yield and quality of their
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<tr>
<td><strong>Pursued Goals</strong></td>
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</tr>
<tr>
<td>Economic</td>
<td>0.72 (0.45)</td>
<td>0.35 (0.48)</td>
<td>0.69 (0.46)</td>
<td>0.78 (0.41)</td>
<td>0.43 (0.49)</td>
<td>0.56 (0.50)</td>
<td>3.164**</td>
<td>3.374**</td>
<td>C14 &gt; C12</td>
</tr>
<tr>
<td>Social</td>
<td>0.83 (0.37)</td>
<td>0.54 (0.50)</td>
<td>0.62 (0.49)</td>
<td>0.91 (0.28)</td>
<td>0.69 (0.46)</td>
<td>0.22 (0.42)</td>
<td>11.903***</td>
<td>5.970***</td>
<td>C11 &gt; C16, C14 &gt; C12, C16, C15 &gt; C16</td>
</tr>
<tr>
<td>Ecological</td>
<td>0.89 (0.31)</td>
<td>0.27 (0.44)</td>
<td>0.27 (0.44)</td>
<td>0.70 (0.46)</td>
<td>0.29 (0.45)</td>
<td>0.17 (0.37)</td>
<td>3.006**</td>
<td>9.118***</td>
<td>C11 &gt; C12, C14, C15, C16 / C14 &gt; C12, C13, C15, C16</td>
</tr>
<tr>
<td><strong>Key Partners</strong></td>
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<tr>
<td>MNC</td>
<td>0.06 (0.73)</td>
<td>0.38 (0.49)</td>
<td>0.17 (0.32)</td>
<td>0.35 (0.48)</td>
<td>0.11 (0.32)</td>
<td>0.50 (0.53)</td>
<td>17.475**</td>
<td>4.377**</td>
<td>C16 &gt; C11</td>
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<tr>
<td>NGO</td>
<td>0.11 (0.31)</td>
<td>0.38 (0.49)</td>
<td>0.58 (0.49)</td>
<td>0.00 (0.00)</td>
<td>0.37 (0.49)</td>
<td>0.61 (0.49)</td>
<td>72.565***</td>
<td>8.084***</td>
<td>C13, C15, C16 &gt; C11 / C12, C13, C15, C16 &gt; C14</td>
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<td>Communities Associations</td>
<td>0.50 (0.30)</td>
<td>0.38 (0.49)</td>
<td>0.00 (0.00)</td>
<td>0.83 (0.38)</td>
<td>0.11 (0.32)</td>
<td>0.17 (0.37)</td>
<td>23.114***</td>
<td>15.560***</td>
<td>C14 &gt; C12, C13, C15, C16, C11 &gt; C12, C13</td>
</tr>
<tr>
<td>Government</td>
<td>0.22 (0.42)</td>
<td>0.12 (0.32)</td>
<td>0.31 (0.46)</td>
<td>0.04 (0.20)</td>
<td>0.14 (0.35)</td>
<td>0.17 (0.37)</td>
<td>6.253***</td>
<td>P&lt;0.05</td>
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</tr>
<tr>
<td>Knowledge Institutions</td>
<td>0.50 (0.30)</td>
<td>0.12 (0.32)</td>
<td>0.04 (0.19)</td>
<td>0.13 (0.34)</td>
<td>0.11 (0.32)</td>
<td>0.00 (0.00)</td>
<td>15.081***</td>
<td>5.675***</td>
<td>C11 &gt; C13, C16</td>
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<tr>
<td><strong>BOP Models</strong></td>
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</tr>
<tr>
<td>Consumer Urban</td>
<td>0.61 (0.49)</td>
<td>0.46 (0.50)</td>
<td>0.15 (0.36)</td>
<td>0.05 (0.28)</td>
<td>0.03 (0.17)</td>
<td>0.11 (0.31)</td>
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<td>9.414***</td>
<td>C11 &gt; C13, C14, C15, C16 / C12 &gt; C14, C15</td>
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<td>Consumer Rural</td>
<td>0.28 (0.45)</td>
<td>0.42 (0.49)</td>
<td>0.38 (0.49)</td>
<td>0.48 (0.50)</td>
<td>0.03 (0.17)</td>
<td>0.61 (0.49)</td>
<td>57.825***</td>
<td>5.637***</td>
<td>C16 &gt; C15 / C12, C13, C14, C16 &gt; C15</td>
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<tr>
<td>Supplier Model</td>
<td>0.00 (0.00)</td>
<td>0.00 (0.00)</td>
<td>0.06 (0.00)</td>
<td>0.26 (0.44)</td>
<td>0.74 (0.44)</td>
<td>0.00 (0.00)</td>
<td>55.540***</td>
<td>34.912***</td>
<td>C15 &gt; C12, C13, C14, C16</td>
</tr>
<tr>
<td><strong>Themes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education, training and employment</td>
<td>0.00 (0.00)</td>
<td>0.00 (0.00)</td>
<td>0.04 (0.19)</td>
<td>0.87 (0.34)</td>
<td>1.00 (0.00)</td>
<td>0.00 (0.00)</td>
<td>12.183***</td>
<td>242.731***</td>
<td>C14 &gt; C12, C13, C14, C16 / C15 &gt; C13</td>
</tr>
<tr>
<td>Basic needs</td>
<td>0.11 (0.31)</td>
<td>0.09 (0.27)</td>
<td>0.92 (0.27)</td>
<td>0.17 (0.38)</td>
<td>0.00 (0.00)</td>
<td>0.00 (0.00)</td>
<td>8.418***</td>
<td>51.734***</td>
<td>C13 &gt; C11, C12, C14, C16</td>
</tr>
<tr>
<td>Energy</td>
<td>0.09 (0.31)</td>
<td>0.04 (0.19)</td>
<td>0.00 (0.00)</td>
<td>0.00 (0.00)</td>
<td>0.00 (0.00)</td>
<td>1.00 (0.00)</td>
<td>9.443***</td>
<td>243.991***</td>
<td>C11 &gt; C12, C13, C14, C15 / C16 &gt; C12</td>
</tr>
<tr>
<td>Technology</td>
<td>0.00 (0.00)</td>
<td>0.88 (0.33)</td>
<td>0.04 (0.19)</td>
<td>0.00 (0.00)</td>
<td>0.00 (0.00)</td>
<td>0.06 (0.23)</td>
<td>7.028***</td>
<td>99.228***</td>
<td>C12 &gt; C11, C13, C14, C15, C16</td>
</tr>
</tbody>
</table>

Table 3: Clusters for enterprises operating in BOP markets

farming practices while connecting them with large buyers of cocoa.

**Cluster 6 – Energy rural**: This typology of enterprises are providers of energy solutions for rural BOP consumers, while working closely with NGOs and MNCs. Solutions include solar lamps, electricity generation, charcoal briquettes and biogas systems. These enterprises cater to the needs of rural households in remote areas, thus they often involve rural electrification objectives through solar and biogas solutions for heating, cooking and electricity generation. Often these energy solutions are not available in the rural remote areas and therefore companies often see this as a market opportunity. Example include Enterprise G, a social enterprise founded in 2013 which aims to make energy available at affordable prices in remote areas in Africa. They work together with several international and local NGOs, employ local entrepreneurs as distributors for their products in remote areas and provide a modular solar lamp for the end-consumers based on the pay-as-you-go model.

**Geography and sustainable performance**

We further investigate the six clusters in order to determine the effect of geography and performance outcomes. We cross-tabulate the six clusters with the region of activity in order to explore whether some clusters are more likely to occur in certain geographical regions. Using Cramer’s V index as a measure of association, we found no significant
differences between the clusters in terms of geographical location (Cramer’s V = 0.203, sig. = 0.258). Therefore, there are no significant differences between clusters according to the region of activity.

In order to test for relationships between typology of clusters and economic performance, we explore variances in outcomes of the six clusters for sales growth and profitability. We find no difference in terms of sales growth between the clusters, based on Cramer’s V index measure of association (Cramer’s V = 0.205, sig. = 0.281). When testing for variances in profitability, we find significant differences between the six clusters. The relationship according to Cramer’s V is statistically significant and moderately strong (Cramer’s V = 0.256, sig. = 0.043). The z test (p<0.05) reveals that the clusters differ significantly in terms of profitability (see Table 4 – in bold all statistically significant differences). Cluster 2 is not very profitable, cluster 3 distinguishes itself with moderate profitability of up to 10%, while cluster 4 presents high profitability levels. Cluster 5, education, training and employment supplier model entails an even distribution of enterprises along profitability dimensions.

In order to determine whether the clusters are associated with different aspects of ecological and/or social performance, we conduct one way ANOVA with post-hoc tests. The six clusters present significant differences in terms of ecological performance, with 4/9 indicators significant at p<0.05 and one significant at p<0.1. Post-hoc analysis suggests that ecological performance is a key outcome for the two energy clusters (1 and 6) and for the education, training and employment for rural consumers (4) (see Table 5). Cluster 1 and 6 present the highest means for ecological performance in regard with energy used within value chain and use of renewable energy, while cluster 4 presents statistically significant high means for health of terrestrial ecosystem and air quality. Although statistically not significant, cluster 4 displays the highest means for all other ecological items.

For social performance, out of the 11 employed indicators, ANOVA is statistically significant only for one item at p<0.05 and two items at p<0.1 (see Table 6). The reason for this lack of difference between the clusters for social performance is a very strong social performance for all clusters. The averages of the remaining 10 items of social performance are relatively high and one can see that the differences in performance are rather small. For several items (skills level and local entrepreneurship, employment and livable wages) all clusters show very high mean scores. All clusters present lower means for three items related to government, political and legal integrity, namely availability of clear and correct information from government agencies,
participation of people in political decision-making and integrity of legal systems within the community. Additionally, cluster 4 displays highest means for 7/10, while cluster 6 for 3/10 social performance items.

Discussion and conclusion

The objective of this study is to systematically categorize BOP enterprises in order to identify meaningful typologies of BOP enterprises and to explore relationships between different typologies and performance outcomes. In order to achieve this, we collect primary data via survey and employ cluster analysis to develop meaningful typologies of BOP enterprises. The typologies are developed based on pursued goals (economic, social and ecological), key partners, themes and BOP consumer/supplier models. Our findings suggest a six cluster solution: energy for urban consumers (1), technology (2), basic needs (3), education, training and employment for rural consumers (4), education, training and employment supplier model (5) and energy for rural consumers (6). In the following paragraphs, we evaluate insights provided by the typology of BOP enterprises, highlight theoretical contributions of this study, discuss limitations and further research opportunities and formulate managerial implications.

Evaluation and discussion of the typology of BOP enterprises

The clusters distinguish themselves in regard to the (combination of) goals pursued, key partners and performance outcomes. The typologies reveal that most BOP enterprises entail high motivations for social goals (exception is only cluster 6 – energy rural which presents the lowest average for social goals orientation). In contrast, the six typologies show that only some BOP enterprises present strong ecological orientation (cluster 1 – energy urban and cluster

<table>
<thead>
<tr>
<th>Variables &amp; Attributes</th>
<th>Cluster 1 – Energy Urban</th>
<th>Cluster 2 – Technology</th>
<th>Cluster 3 – Basic needs</th>
<th>Cluster 4 – Education Rural</th>
<th>Cluster 5 – Education Supplier</th>
<th>Cluster 6 – Energy Rural</th>
<th>ANOVA F-Test</th>
<th>Levine’s Test</th>
<th>Post-hoc Tukey or Dunnett’s T3 Test (depending on Levine’s Test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health of the terrestrial ecosystem, including its biodiversity</td>
<td>5.39 (1.635)</td>
<td>4.31 (1.192)</td>
<td>5.00 (1.649)</td>
<td>5.74 (1.251)</td>
<td>4.83 (1.382)</td>
<td>4.83 (1.425)</td>
<td>3.056 (0.012)</td>
<td>1.656 (0.149)</td>
<td>Tukey - CL4 &gt; CL2</td>
</tr>
<tr>
<td>Air quality</td>
<td>5.17 (1.654)</td>
<td>4.27 (1.079)</td>
<td>4.73 (1.663)</td>
<td>5.22 (1.166)</td>
<td>4.09 (1.164)</td>
<td>5.50 (1.339)</td>
<td>4.349 (0.001)</td>
<td>2.889 (0.016)</td>
<td>Dunnett – CL6 &gt; CL2, CL5 CL 4 &gt; CL5</td>
</tr>
<tr>
<td>Amount of energy use within the value chain, including customers</td>
<td>5.89 (1.323)</td>
<td>4.42 (1.102)</td>
<td>4.73 (1.823)</td>
<td>5.43 (1.409)</td>
<td>4.54 (1.221)</td>
<td>5.94 (1.110)</td>
<td>5.665***</td>
<td>2.977 (0.014)</td>
<td>Dunnett - CL1 &gt; CL2, CL5 CL 6 &gt; CL2, CL5</td>
</tr>
<tr>
<td>Use of sustainable and renewable energy sources</td>
<td>6.06 (1.259)</td>
<td>4.62 (1.235)</td>
<td>5.12 (1.705)</td>
<td>5.48 (1.273)</td>
<td>4.62 (1.181)</td>
<td>6.18 (1.510)</td>
<td>5.580***</td>
<td>1.089 (0.370)</td>
<td>Tukey – CL1 &gt; CL2, CL5 CL6 &gt; CL2, CL5</td>
</tr>
<tr>
<td>Health of the aquatic and marine ecosystem, including its biodiversity</td>
<td>4.76 (1.855)</td>
<td>4.31 (0.970)</td>
<td>4.27 (1.402)</td>
<td>5.09 (1.379)</td>
<td>4.26 (1.189)</td>
<td>4.00 (1.237)</td>
<td>1.955 (0.089)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Natural resource management (e.g. percentage of total forest area certified for sustainable management)</td>
<td>4.61 (1.420)</td>
<td>4.31 (0.890)</td>
<td>4.69 (1.692)</td>
<td>5.39 (1.196)</td>
<td>4.60 (1.241)</td>
<td>4.94 (1.305)</td>
<td>1.866 (0.104)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Amount of toxic discharges to the environment</td>
<td>4.71 (1.863)</td>
<td>4.31 (0.928)</td>
<td>4.62 (1.981)</td>
<td>5.17 (1.527)</td>
<td>4.21 (1.591)</td>
<td>5.12 (1.453)</td>
<td>1.574 (0.171)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Amount of water use</td>
<td>4.67 (1.372)</td>
<td>4.58 (1.362)</td>
<td>4.85 (1.713)</td>
<td>5.09 (1.441)</td>
<td>4.34 (0.998)</td>
<td>4.50 (1.461)</td>
<td>0.966 (0.441)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Amount of overall material use</td>
<td>4.83 (1.505)</td>
<td>4.46 (1.174)</td>
<td>4.88 (1.716)</td>
<td>5.30 (1.295)</td>
<td>4.66 (1.110)</td>
<td>4.78 (1.517)</td>
<td>0.043 (0.395)</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Table 5: Ecological performance of the six clusters
4 – education rural). Cluster 1 – energy urban and cluster 6 – energy rural both commercialize energy solutions, but while cluster 1 distinguishes itself with a very strong ecological orientation, cluster 6 is on the other extreme with the lowest ecological orientation. This may be because energy solutions in urban areas are available and therefore launching new energy solutions into the market, the value proposition needs to emphasize either affordability, health benefits or ecological benefits. Energy solutions in rural remote areas are frequently unavailable, therefore BOP enterprises in cluster 6 – energy rural perceive this as a market opportunity with clear economic gains.

The fact that our cluster solution is driven by themes illustrates that BOP enterprises entail significant differences according to the nature of the sector rather than geographical and socio-cultural context. The clusters solution and the lack of significant relationship between clusters and geography may suggest that theme-based analytical comparisons are more constructive rather than geographic ones. This is supported by Nahi (2016) who suggests that individual characteristics of various industries may require different approaches for BOP markets. The structure of the clusters suggest that different partners are valuable in different settings and for different sectors. Cluster 6 – energy rural has ongoing strong collaboration with MNC and this may be because there is a leverage knowledge, research and development capabilities and decrease initial investment costs in technology.

The fact that the typologies do not differ in terms of sales growth is not surprising since ventures in the sample are rather young and thus still in the high-growth stages of their evolution (with 40% of enterprises encounter

<table>
<thead>
<tr>
<th>Variables &amp; Attributes</th>
<th>Cluster 1 – Energy Urban</th>
<th>Cluster 2 – Technology</th>
<th>Cluster 3 – Basic needs</th>
<th>Cluster 4 – Education Rural</th>
<th>Cluster 5 – Education Supplier</th>
<th>Cluster 6 – Energy Rural</th>
<th>ANOVA F-Test</th>
<th>Levine’s Test</th>
<th>Post-hoc Tukey or Dunnett’s T3 Test (depending on Levine’s Test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability of clear and correct information from government agencies</td>
<td>4.44 (1,504)</td>
<td>4.77 (1,117)</td>
<td>4.38 (1,267)</td>
<td>4.70 (1,063)</td>
<td>4.26 (1,291)</td>
<td>3.39 (1,461)</td>
<td>2.961 (0,014)</td>
<td>0.543 (0,743)</td>
<td>Tukey - CL2 &gt; CL6 CL4 &gt; CL6</td>
</tr>
<tr>
<td>Availability of primary life necessities (e.g. water, sanitation)</td>
<td>5.50 (1,948)</td>
<td>5.08 (1,262)</td>
<td>5.38 (1,941)</td>
<td>5.35 (1,465)</td>
<td>4.51 (1,541)</td>
<td>5.78 (1,060)</td>
<td>2.090 (0,070)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Discrimination and human rights</td>
<td>4.17 (1,098)</td>
<td>4.40 (1,155)</td>
<td>4.58 (1,701)</td>
<td>5.22 (1,347)</td>
<td>4.54 (1,615)</td>
<td>3.89 (1,530)</td>
<td>1.993 (0,083)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Availability of good healthcare services and products</td>
<td>4.56 (1,756)</td>
<td>4.88 (1,395)</td>
<td>4.96 (1,612)</td>
<td>4.83 (1,466)</td>
<td>4.49 (1,245)</td>
<td>4.22 (1,478)</td>
<td>0.831 (0,530)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Availability of good regular education</td>
<td>4.44 (1,790)</td>
<td>4.96 (0,999)</td>
<td>4.85 (1,592)</td>
<td>5.32 (1,393)</td>
<td>4.57 (1,335)</td>
<td>4.44 (1,504)</td>
<td>1.270 (0,280)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Infrastructure (e.g. housing, transportation)</td>
<td>4.17 (1,724)</td>
<td>4.77 (1,275)</td>
<td>4.69 (1,517)</td>
<td>4.23 (1,445)</td>
<td>4.49 (1,245)</td>
<td>4.94 (1,552)</td>
<td>0.938 (0,458)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Participation of people in political decision-making</td>
<td>3.89 (1,491)</td>
<td>4.08 (1,017)</td>
<td>4.04 (1,216)</td>
<td>4.50 (1,504)</td>
<td>4.26 (1,336)</td>
<td>4.00 (1,782)</td>
<td>0.549 (0,739)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Integrity of the legal system within the community</td>
<td>4.56 (1,423)</td>
<td>4.46 (1,140)</td>
<td>4.27 (1,343)</td>
<td>4.65 (1,265)</td>
<td>4.44 (1,186)</td>
<td>4.28 (1,708)</td>
<td>0.288 (0,919)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Physical safety and resistance to natural disasters</td>
<td>4.67 (1,910)</td>
<td>4.35 (1,164)</td>
<td>4.72 (1,621)</td>
<td>4.78 (1,413)</td>
<td>4.29 (1,338)</td>
<td>4.89 (1,451)</td>
<td>0.694 (0,629)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Overall skills level and local entrepreneurship</td>
<td>5.33 (1,572)</td>
<td>5.42 (1,206)</td>
<td>5.62 (1,061)</td>
<td>6.13 (0,968)</td>
<td>5.69 (1,207)</td>
<td>5.56 (0,922)</td>
<td>1.270 (0,280)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Overall employment and livable wages</td>
<td>5.17 (1,383)</td>
<td>5.15 (1,434)</td>
<td>5.50 (1,208)</td>
<td>5.91 (1,240)</td>
<td>5.86 (0,974)</td>
<td>5.61 (1,461)</td>
<td>1.655 (0,149)</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Table 6: Social performance of the six clusters
growth rates higher than 20%, and 36% of enterprises growth rates of up to 20%). Cluster 2 is not very profitable and this may be due to high capital intensity of technologies involved. The six clusters differ significantly in regard with ecological performance, with three clusters clearly outperforming the other (cluster 1 – energy urban, cluster 4 – education rural and cluster 6 – energy rural). The six typologies do not differ significantly in regard with social performance because all enterprises present very high averages for social performance. As expected, BOP enterprises present very high performance for items related to employment, local entrepreneurship and skills level. Literature findings suggest that small enterprises in BOP markets drive significant capacity building and engage actively BOP consumers in various forms across the value chain stages (Rosca et al., 2016; Levänen et al., 2015). BOP enterprises present lower means for social performance related to government, legal and regulatory frameworks. This may be because small enterprises entail lower power relations and strong engagement with “fringe stakeholders” such as NGOs and local BOP consumers does not have the capacity to influence policy and government regulations (Hart and Sharma, 2004).

While consolidating different insights and comparing firm pursued goals with performance outcomes, several interesting insights emerge. Firstly, clusters 6, 2, 3 and 5 did not distinguish themselves in regard with strong ecological orientation, while clusters 1 and 4 having strong ecological orientation. Therefore, as expected, clusters 2, 3 and 5 present rather weak ecological performance, while clusters 1 and 4 strong ecological performance. Yet, cluster 6 is clearly the outlier with distinguishable strong ecological performance which may be very much related to the nature of the products/services offered in the energy sector. The fact the energy clusters 1 and 6 create significantly more ecological value than others it is not surprising since it is the nature of the product/services offered which addresses ecological issues. What is interesting here is that cluster 6 has the lowest ecological orientation but it is the most distinguishable cluster in terms of ecological performance (for 3/4 indicators has statistically significant higher performance).

Cluster 6 which provides energy solutions for rural consumers entails low social and ecological orientation, but in terms of performance outcomes – it is mostly not profitable, presents high ecological performance and high social performance for several aspects. Low levels of profitability within these ventures may be due to high capital intensity of the energy sector, while high ecological performance is somehow expected and very much tied to the nature of the sector. In regard with social performance, cluster 6 provides primary life necessities, infrastructure and physical safety and resistance. This cluster illustrates an exception to traditional perspectives which perceive outcomes to be always tied up to main purpose and mission of an enterprise (Neck et al., 2009; Andrews, 1971). Firms may not always need to pursue explicit ecological or social goals in order to create ecological impact. Further research should explore in-depth such cases and related implications.

In terms of economic aspects, the only distinguishable cluster with high economic orientation and high economic performance is cluster 4. This cluster provides education services for rural consumers and distinguishes itself among the rest with good profitability, very good ecological and social impact. BOP enterprises in this cluster clearly state their triple bottom line orientation which in turn
seems to result in better economic, social and ecological impact. The fact that these enterprise’s main offerings relate to education in different settings shows the multiplier effect of education for sustainable performance (Stubbs and Cocklin, 2008). Provision of education services rather than affordable products and services creates a much larger impact and addresses the structural issues of poverty (Nahi, 2016). Strong education, training and empowerment lead to enhancement of human capabilities and therefore poverty alleviation according to the capabilities approach of Sen (1999).

We found that pursuing social or ecological goals does not always translate in social/ecological performance and similarly a weak focus on social/ecological goals does not inherently mean weak performance on these areas. Therefore, our findings challenge that assumption that outcome is rooted in the main purpose of a firm. We found that enterprises providing education services to rural consumers and pursuing triple bottom line goals distinguish themselves from the other typologies through better economic, ecological and social performance.

Theoretical contributions

There are several notable studies in the social entrepreneurship and BOP literature which attempt to develop topologies and categories of enterprises along different dimensions. This study is inspired from Mair et al. (2012)’s typologies of ‘social entrepreneuring’ models and provides a detailed look into one specific cluster of enterprises which leverage economic capital. Yet, we extend the typology developed by Mair et al. (2012) study with several important contributions. Firstly, this study provides a fine-grained perspective into one typology of enterprises Mair et al. (2012) identify, namely enterprises which leverage economic capital to drive social change. Secondly, this study employs primary data collected from BOP enterprises which allows the incorporation of aspects related to goals pursued. Thirdly, this study explores relationships between different typologies and performance outcomes along the economic, social and ecological dimensions.

This contribution provides a first step understanding of how effective (in terms of economic, social and ecological performance) are different mechanisms employed by MSME pursuing different objectives. Especially interesting and unique is the link between pursing multiple goals and multiple performance dimensions. Since the goal of these enterprises is to drive positive social change and being self-sufficient is rather a means to an end, it is important to understand how different typologies relate to different performance dimensions.

We contribute to the BOP literature by overcoming the MNC focus and bringing highlight on MSME as agents of change. The six typologies of BOP enterprises aim to inform further research in the field by mapping key issues relevant for different groups of BOP enterprises, but also inform policy makers and guide targeted decision making, regulations and support services.

Developing typologies of social enterprises in general and BOP in particular is especially relevant to revive the debate on theory of intermediation recently explored in BOP settings (see Kistruck et al., 2013). In order to better understand structuring decisions made by third party stakeholders in BOP context it is useful to distinguish between different categories of BOP enterprises and their motivations, operating models and performance outcomes.
Limitations and further research

This study also entails several limitations which open avenues for further research. Firstly, all data for clustering variables and performance outcomes has been collected through one survey. This methodological limitation may present biases in the data collection processes. In order to account for this, further research can collect external data from the enterprises and further test the cluster solutions employing such data. Secondly, the measurement items for social performance could be more customized and refined in order to reveal differences in social performance aspects between the clusters. This aspect is very important because the main ‘Raison d'Être’ for BOP enterprises is to tackle poverty and inequality issues. Thirdly, this study has not addressed an important issue within the BOP debate, namely the inclusion aspect. Further research should investigate whether there are differences between the levels of inclusiveness for different clusters. Since our analysis serves as a snapshot of current practices, further research should explore relationships and causal interferences between the goals pursued and selection of partners.

Managerial implications

This study has also important implications for BOP entrepreneurs, practitioners, policy makers and intermediaries’ organizations in BOP settings. Firstly, BOP entrepreneurs can learn how different categories of enterprises drive impact and adjust their offerings/value proposition accordingly. Especially relevant is the insights on the power of education. BOP entrepreneurs can integrate further services related to education, advice and training provision to enhance the economic, ecological and social performance of their enterprises. Secondly, policy makers can develop targeted decision making and policies for different typologies of BOP enterprises, depending on their goals, partners and impact. Our typology of BOP enterprises can further guide customized impact measurement frameworks for specific themes since impact metrics look different for different industries. Thirdly, there are numerous intermediary organizations such as hubs, networks and platforms targeting social entrepreneurs with numerous services, such as training, mentoring, technical advisory, funding and investor brokering services. These intermediary organizations can customize their offerings depending on the characteristics identified as key for each typology of enterprises. Our findings show that it is important is to learn from enterprises providing education services to rural consumers which attempt to successfully pursue economic, social and ecological goals, and achieve performance across the same three dimensions. Moreover, intermediary organizations can spot which sectors and typologies of enterprises face particular challenges to achieve economic performance and provide solution approaches. BOP landscape entails a wide variety of HNP and their service offering in terms of type, maturity and size of supported initiatives, scope, thematic and geographical focus. Yet, our findings shows that BOP enterprises across regions have different orientations and performance outcomes, therefore need different types of support services.

References


### Appendices

**Appendix 1 – Clustering variables, attributes and descriptive statistics**

<table>
<thead>
<tr>
<th>Clustering Variables and Attributes</th>
<th>Number of enterprises</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Firm Goals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic</td>
<td>83</td>
<td>57%</td>
</tr>
<tr>
<td>Social</td>
<td>94</td>
<td>64%</td>
</tr>
<tr>
<td>Ecological</td>
<td>59</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Key Partners</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MNC</td>
<td>35</td>
<td>24%</td>
</tr>
<tr>
<td>NGOs</td>
<td>58</td>
<td>40%</td>
</tr>
<tr>
<td>Community Associations</td>
<td>45</td>
<td>31%</td>
</tr>
<tr>
<td>Governments</td>
<td>24</td>
<td>16%</td>
</tr>
<tr>
<td>Knowledge Institutions</td>
<td>20</td>
<td>14%</td>
</tr>
<tr>
<td><strong>BOP Models</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOP Consumer Urban</td>
<td>32</td>
<td>22%</td>
</tr>
<tr>
<td>BOP Consumer Rural</td>
<td>49</td>
<td>34%</td>
</tr>
<tr>
<td>BOP Supplier</td>
<td>32</td>
<td>22%</td>
</tr>
<tr>
<td><strong>Themes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education, training and employment</td>
<td>56</td>
<td>38%</td>
</tr>
<tr>
<td>Basic needs</td>
<td>32</td>
<td>22%</td>
</tr>
<tr>
<td>Energy solutions</td>
<td>35</td>
<td>24%</td>
</tr>
<tr>
<td>Technology</td>
<td>25</td>
<td>17%</td>
</tr>
<tr>
<td>Health</td>
<td>13</td>
<td>9%</td>
</tr>
</tbody>
</table>
**Appendix 2 – Items used for social and ecological performance, with Cronbach’s Alpha**
*(Items in italic have shown significant differences between the six clusters)*

<table>
<thead>
<tr>
<th>Social Performance</th>
<th>Cronbach’s Alpha=0.802.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please indicate the degree to which your organization has a positive or negative impact on the communities in which it operates within the areas below.</td>
<td></td>
</tr>
<tr>
<td>Availability of clear and correct information from government agencies</td>
<td></td>
</tr>
<tr>
<td>Availability of primary life necessities (e.g. water, sanitation)</td>
<td></td>
</tr>
<tr>
<td>Discrimination and human rights</td>
<td></td>
</tr>
<tr>
<td>Overall employment and liveable wages</td>
<td></td>
</tr>
<tr>
<td>Overall skill level and local entrepreneurship</td>
<td></td>
</tr>
<tr>
<td>Physical safety and resistance to natural disasters</td>
<td></td>
</tr>
<tr>
<td>Integrity of the legal system within the community</td>
<td></td>
</tr>
<tr>
<td>Availability of good regular education and/or health education</td>
<td></td>
</tr>
<tr>
<td>Participation of people in political decision making</td>
<td></td>
</tr>
<tr>
<td>Availability of good healthcare services and products</td>
<td></td>
</tr>
<tr>
<td>Infrastructure (e.g. housing, transportation)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ecological Performance</th>
<th>Cronbach’s Alpha=0.904.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please indicate the degree to which your organization has a positive or negative impact on the communities in which it operates within the areas below.</td>
<td></td>
</tr>
<tr>
<td>Health of the terrestrial ecosystem, including its biodiversity</td>
<td></td>
</tr>
<tr>
<td>Air quality</td>
<td></td>
</tr>
<tr>
<td>Amount of energy use within the value chain, including customers</td>
<td></td>
</tr>
<tr>
<td>Use of sustainable and renewable energy sources</td>
<td></td>
</tr>
<tr>
<td>Health of the aquatic and marine ecosystem, including its biodiversity</td>
<td></td>
</tr>
<tr>
<td>Amount of toxic discharges to the environment</td>
<td></td>
</tr>
<tr>
<td>Amount of overall material use</td>
<td></td>
</tr>
<tr>
<td>Amount of water use</td>
<td></td>
</tr>
<tr>
<td>Natural resource management (e.g. percentage of total forest area certified for sustainable management)</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3 – Descriptive statistics of the sample

- **Location of BOP SMEs, N=146 (Local branches) (in %)**
  - Africa: 40%
  - Asia: 35%
  - Central and South America: 15%
  - Others (Eastern Europe, Global reach): 10%

- **Size Analysis, Number of employees, N=146 (in %)**
  - Less than 10: 9.31%
  - Between 11 and 25: 34.83%
  - Between 26 and 50: 10.3%
  - Between 51 and 100: 24.11%
  - Between 101 and 250: 4.83%
  - More than 250: 7.59%

- **Age, in years, N=145 (in %)**
  - Less than 1 year: 6%
  - Between 1 and 2 years: 21%
  - Between 3 and 5 years: 29%
  - Between 5 and 10 years: 26%
  - More than 10 years: 19%
6 Theoretical Contributions

6.1 Answering the research question

The overarching aim of this thesis is to answer the following research question:

*How to enhance sustainable performance of business efforts in low-income markets?*

This research question comprises of three components, namely 1) evaluate approaches and mechanisms for sustainable performance, 2) analyze drivers which determine the adoption of certain approaches or mechanisms and 3) explore the nature of interdependencies between three sustainable performance dimensions. In order to answer the proposed research question with the three components, quantitative and qualitative methods are employed, different theoretical perspectives and insights from several relevant research streams are combined in four journal articles. The first two journal papers adopt a general perspective and are part of the exploratory phase of this thesis. Insights from the first two studies are investigated more thoroughly in the last two journal papers in order to empirically test developed hypotheses and provide a typology of MSME as the basis to define a future research agenda and practical recommendations. The thesis adopts the perspective of MSME operating in BOP markets in order to address the research question.

Findings in this thesis suggest that in low-income settings, where BOP consumers present financial, social and cognitive vulnerabilities, the *main mechanism* for integrated economic, social and ecological performance is education and knowledge-driven collaboration with local BOP consumers. By engaging local consumers at various stages of the value chain, MSME drive sustainable performance mainly through education, training and capacity building. Additionally, MSME leverage the local networks and legitimacy of cross-sector actors in order to approach BOP consumers. Therefore, collaboration with cross-sector actors acts as a *mechanism which mediates* the relationship between MSME and BOP consumers.
Empirical findings in this thesis reveal that the **main driver** determining MSME to integrate BOP in operations is their strong normative orientation. These MSME start with a problem in the local communities and attempt to develop solutions to solve it while aiming for economic viability. They attempt to develop value propositions for groups of customers able and willing to pay while addressing a social issue. Most frequently, these MSME through their nature, combine local knowledge and skills with foreign expertise, bring together top down and bottom up approaches by employing mechanisms such as integration of BOP consumers in operations and collaboration with cross-sector actors. The normative orientation of these MSME along with their strategic direction is driven by their founders – locals and foreigners determined to drive sustainable development. This normative orientation is formally embedded in the MSME’s key policy documents and determines them to go beyond their social value proposition and engage actively and deeply in collaborative efforts with local communities.

This study reveals that the nature of **interdependencies** between sustainable performance dimensions is complex and needs further detailed investigation. Empirical findings in this thesis do not provide sufficient support for the main BOP proposition that social performance in local communities reinforces economic performance of MSME. This means that MSME struggle to balance different performance dimensions in low-income settings. An interesting insight found in this thesis is that collaboration with MNC seems to be moderating the relationships between social and economic, ecological and economic performance.

Long-term survival and thus social/ecological impact of MSME in BOP settings has as prerequisite an economic viable business proposition. Since these MSME are problem-driven ventures, most of them struggle to design a business model with a feasible revenue model. BOP market space is full of needs, but not all present viable market opportunities. A key ingredient while doing business at the BOP is to spot the market opportunity behind the social need. MSME have to answer questions related to affordability of the product or service, value proposition for customers (buyers) and consumers (end-users), value proposition which incorporates social and/or ecological benefits, value chains which engage local communities at different stages, collaboration with MNC and non-traditional partners.
MSME borrow different elements of sustainable development in their business models but do not employ clear sustainability approaches and mechanisms aiming to combine economic, social and ecological benefits. It is often the case that the social or ecological benefits provided by a MSME are tied to the nature of the product/service provided. While provision of affordable products and services does not directly translate to poverty alleviation, one must distinguish between selling shampoo sachets and providing electricity in rural remote areas. This is especially the case for industries such as renewables, clean technologies or healthcare which have a multiplier effect on various aspects of life. In these industries, when a clear market opportunity is identified, a firm does not necessary need normative orientation to drive social and ecological impact. However, in such cases, firms operating in low-income settings need very strong ethical values and principles to avoid exploitation of unequal power relationships and vulnerabilities of BOP.

The key findings of this thesis highlight that MSME are central players in the BOP landscape as they connect relevant stakeholders and entail a strong normative orientation. This strong mind set towards sustainable development is needed in order to drive ecological and social development in low-income markets. MSME are key actors because they entail this strong normative orientation which allows then not only to design business models and value propositions for sustainability, but to move beyond and actively drive local education and capacity building through engagement with BOP local communities.

6.2 The nature and role of MSME in low-income settings

Research Gap and Contribution
The literature has been dominated by findings and implications from the MNC perspective. However, since there is increasing empirical support revealing that MSME address social and ecological issues in BOP markets in a very comprehensive manner, there is need for a fine-grained investigation on the nature of MSME, their orientations, business approaches and impact in local communities.
Emerging themes in the systematic literature review highlight the important role of MSME for high social impact (see Pansera & Sarkar, 2016; Levänen et al., 2015). The secondary data analysis of frugal and BOP products and services reveals that there are differences in business approaches and sustainability strategies employed by MNC and MSME. MNC adopt approaches directly related to their operations with direct impact on costs such as reducing material usage and increasing energy efficiency and attempt to develop affordable products and service for BOP markets. On the other hand, MSME frequently go beyond and develop context-specific solutions based on deep understanding of local problems and environments, develop solutions based on natural processes or use of waste materials. The descriptive analysis from the large empirical survey points out that MSME in BOP settings have as starting point given social problems in the local communities and develop innovative solutions. These problems include lack of clean and/or running water, high rates of infant mortality, lack of electricity, heating or cooking energy, sanitation, housing and nutritious food. This could be why scholars argue that social value creation is organic part of value creation in BOP markets (Sinkovics et al., 2014). As some scholars argue that providing affordable products and services does not address the structural issues of poverty (Nahi, 2016; Birtchnell, 2013), findings in this thesis suggest that provision of basic services from certain sectors has multiplier effects on the human development level of BOP. For example, provision of good healthcare decreases mortality, increases ability to engage in income generating activities and in community life. Similarly, provision of energy enables long studying or working hours and the creation of new market opportunities (Levänen et al., 2016).

This strong social orientation has been suggested by scholars (see Pansera & Sarkar, 2016; Sinkovics et al., 2014; Birtchnell, 2013) and seems to be a key characteristics of BOP enterprises which has important implications for the economic, social and ecological outcomes of MSME. As found by in-depth case studies in the literature (see Levänen et al., 2015), empirical findings in this thesis support the idea that the strong normative orientation formally embedded in the policy documents enables active engagement of MSME in local communities’.

Findings in this thesis suggest that MSME are problem-driven ventures with very strong social orientation. Starting with a strong social mission and vision, these enterprises struggle to create a business proposition and thus a viable business model. In this context, the distinction between
consumer and customer is critical because frequently BOP are the end-consumers, but the customers, or the ones who actually pay for the product/service are intermediaries, such as NGOs, hospitals, retailers, wholesalers, etc. This is because of several affordability and infrastructural constraints in these markets (Anderson & Markides, 2007). The reasons mentioned above may be why many scholars call for new business models in BOP settings arguing that traditional ones do not function here (London & Hart, 2004). In industrialized settings, the focus of business model design is on identifying new customer segments, unfulfilled needs and diversifying revenue models (Frankenberger et al., 2013). In low-income settings the main challenges related to designing sustainable business efforts include how to transform a social need into a market opportunity, how to design a business proposition aligned with the strong normative orientation and how to develop in-depth understanding of local needs, structures and systems in order to develop localized value chains.

MSME enterprises are driven by their founders, who have a critical role in shaping the enterprise’ strategic direction. This empirical findings support literature claims that BOP entrepreneurs are motivated to address a combination of social and economic issues. Yet, while Hart et al. (2016) suggest that these founders directly experience the issues their enterprises attempt to solve and are locally embedded in BOP markets, MSME in our sample are founded by entrepreneurs foreign to BOP settings (not necessarily foreign to the country). Therefore, MSME in our sample show clear signs of what London (2007) calls ‘external participation’ element. This external involvement shows how MSME bring together formal and informal markets, combine local and foreign expertise and experiences and address local issues (Hart & London, 2005).

Beyond provision of affordable products and services, combination of local with foreign knowledge and active engagement of local communities, MSME can have other important contributions. By reaching out to remote communities and locations, MSMEs address what Prabhu and Jain (2015) call the ‘last-mile’ problem, which means filling in institutional gaps and including communities which cannot be reached by government actions (Knorrina et al, 2016). Moreover, scholars suggest that MSMEs showcase examples and best practices for a new generation of leaders determined to drive social change (Prabhu & Jain, 2015).
This research found six typologies of MSME operating in BOP markets, namely energy for urban consumers (1), technology (2), basic needs (3), education, training and employment for rural consumers (4), education, training and employment supplier model (5), energy for rural consumers (6). The typology of MSME operating in BOP markets reveals interesting insights on the nature and challenges of MSME. These typologies suggests that the requirements of various sectors differ in terms of required partners, BOP models and even pursued goals.

Further Research

Contributions, roles and challenges faced by different groups of MSME can be explored further in the context of external conditions of specific sectors. Strong social orientation of MSME may endanger their long-term survival. A priority for further research is to explore options for MSME for scaling and growth while preserving initiator social orientation. Literature proposes several options for scaling, including collaboration with MNC (Seelos & Mair, 2007) or clusters of value chains and alliances between groups of MSME (Berner et al., 2012), but further research should explore which scaling options are suitable for which groups of MSME and how scaling decisions are influenced by pursued goals.

The findings of this thesis suggest that the rise of MSME in the BOP arena brings together several research streams, namely social enterprises, hybrid organizations and BOP debate. MSME operating in BOP markets can be regarded as one typology of social entrepreneurship models which pursue social missions while engaging in commercial activities (Mair et al., 2012) also known as hybrid enterprises (Battilana et al., 2015). Such organizations face significant challenges to scale while balancing between social/ecological and economic goals. This strong social orientation guides processes such as decision making, resource acquisition, projects prioritization and partner’s selection (Doherty et al., 2014). Therefore, further research efforts should explore options for scaling, balancing different goals and how does that impact partner selection and resource acquisition.
6.3 Value co-creation in BOP settings

Research Gap and Contribution

Current literature in the area of sustainable business in BOP markets points out that in order to drive sustainable performance in low-income settings, firms need to engage in co-creation with local consumers, communities, NGOs and community associations to develop an understanding of local structures, systems and societal issues (Nahi, 2016; London & Hart, 2004; Simanis & Hart, 2008). While current literature provides extensive theoretical arguments and empirical support of qualitative nature, empirical support on a large scale for this causal relationship is missing.

This thesis provides empirical evidence for a BOP model where local consumers are active creators of economic value rather than only consumers. Engaging in co-creation with BOP consumers leads to increased economic value for the firm and higher social and ecological impact in the local communities. By employing an operationalization approach of co-creation based on value chain activities, empirical findings suggest that perceiving BOP as suppliers, innovators, producers, distributors and sellers strongly impacts the economic performance of the firm. One reason for this strong link could be that BOP are informal markets where most transactions are based on trust and most effective marketing is word of mouth (Bendul et al., 2016; London et al., 2010). In these societies based on social norms and trust, engaging locals serves as a license to operate (Kolk & Van Tulder, 2010). The typologies of MSME operating in BOP markets provides further support that enterprises engaging in intensive training and education activities with BOP are better off economically, socially and environmentally. Engaging in intensive education, training and empowerment activities with BOP is what Nahi (2016) calls deep co-creation which addresses structural roots of poverty.

Beside co-creation with BOP actors, in this thesis the role of cross-sector partners is evaluated based on empirical analysis. Findings suggests that MSME work most closely with local NGOs and communities associations. Current literature often perceives cross-sector actors as mediator between BOP and MSME (Hahn and Gold, 2014; Dahan et al., 2010). Results in this study point out that cross-sector actors mediate partially the relationship between normative orientation of the firm and BOP consumer integration. Moreover, the typology of MSME
reveals that the level of engagement between a BOP enterprise and a group of cross-sector partners depends on the nature of the sector and goals of the enterprise. The six typologies of BOP enterprises show that different partners or combinations of partners are relevant for different settings.

This thesis provides empirical evidence and extends the theory of value co-creation in informal markets context. Findings suggests that co-creation in low-income settings has different meaning and aims compared to industrialized countries settings. Value co-creation in traditional sense refers to the incorporation of consumers’ voices in value creation activities in order to reduce costs, increase revenues and develop sustainable competitive advantage (Prahalad & Ramaswamy, 2004 a,b). More specifically, in industrialized settings, firms engage in co-creation activities with consumers in order to improve responsiveness and frequently through means of technology (Vargo & Lusch, 2008; Prahalad & Ramaswamy, 2004a,b). In BOP settings, co-creation has a different meaning and thus different aims and approaches. Firstly, MSME engage in co-creation activities not only with BOP consumers, but also with other local actors, including community associations, NGOs, knowledge institutions and local intermediaries. These actors frequently mediate the relationships between BOP consumers and MSME. The selection of the right group of actors for a given enterprise to engage in co-creation depends on the community, theme and nature of the enterprises. For example, enterprises which provide energy solutions for rural BOP consumers engage in close collaborations with local NGO and MNC, while supplier-based ventures sourcing from the BOP engage most actively with local NGO. The aim of co-creation in BOP markets is to gain legitimacy and develop a dialogue with local stakeholders (George et al., 2015). Gaining legitimacy in BOP does not always imply co-creation with BOP, but rather with groups and organizations which play a significant role in the local community life. These organizations can be community associations or local NGO and strong collaboration with them can facilitate an understanding of the local context, barriers and institutional constraints (London, 2007; London & Hart, 2004). Secondly, while consumers in industrialized settings have high bargaining power in this era of social media and online communication, BOP consumers do not entail the same level of bargaining power over firms, NGO or other institutions. This implies that employing traditional management frameworks with implicit assumptions of economic value creation may not lead
to desirable social outcomes. Thirdly, co-creation in industrialized settings is often mediated by technology, social media and online platforms ensuring anonymity of individual consumers, while in BOP context, working on the field, in the local community seems to be key for success. This fact has also implications on the sincerity level of actors engaged in co-creation. Face to face engagement between actors with very different levels of bargaining power and vulnerabilities raises issues of effectiveness of co-creation mechanisms in such settings.

**Further Research**

While this research provides interesting empirical insights, it also opens avenues for further investigations in regard to value co-creation and BOP engagement in low-income settings. Firstly, the literature could benefit greatly from studies on inclusion and co-creation from the perspective of BOP. The lack of studies from the perspective of BOP is problematic since the levels of inclusion perceived by MSME may be very different than the perspective of MSME. Therefore, further research should attempt to conceptualize and measure co-creation from the perspective of BOP in order to reveal to what extent the mechanisms are knowledge driven and how are human capabilities extended (Karnani, 2007). Such studies can also explore and uncover the problem of shared-value creation and fair distribution of returns (Matos and Sylvestre, 2013; Porter & Kramer, 2011). Secondly, the inclusion of BOP in value chain activities demands the consideration of ethical aspects related to exploitation and unequal power balances (Baud, 2016; Knorringa et al, 2016; Pansera, 2013). Further research can draw on development research for tools, approaches and theoretical frameworks to understand exploitation and unequal power relationships and adopt this perspective in business studies.

### 6.4 Drivers and mechanisms of sustainable performance in low-income markers

**Research Gap and Contribution**

Scholars have been investigating which factors drive social and ecological performance in industrialized settings. Yet, informal markets nature of BOP characterized by weak regulatory framework requires further investigation on which factors drive firms to incorporate social and
ecological aspects in their operations (Silvestre, 2015). Empirical research in the area of sustainable operations and business models is dominated by industrialized countries perspectives (Silvestre, 2015) and focus on ecological aspects (Seuring & Müller, 2008). In this sense, this thesis makes an important theoretical contribution by exploring drivers and mechanisms of sustainable performance from low-income settings and bringing in an integrated perspective with social and ecological aspects.

Findings of this thesis suggest that a key mechanism for sustainable performance in low-income settings refers to BOP consumer integration in operations. MSME in BOP settings engage local BOP actors at various stages of their value chain as suppliers, producers and distributors and contribute significantly to increased skills level, employment, livable wages, local entrepreneurship and provision of primary life necessities. By actively engaging with local BOP, MSME enable access to global knowledge, new markets and entrepreneurial opportunities creation in low-income communities. In terms of ecological impact, MSME drive the promotion and distribution of renewable energy technologies and solutions which have great ecological impact. The ecological impact in local communities is further enhanced by co-creation activities with BOP consumers through the creation of ecological awareness. Bendul et al. (2016) found that there is little ecological awareness at the BOP and approaches to ecological sustainability are rather driven by affordability constraints rather than explicit ecological orientation. Findings in this thesis suggests that by engaging BOP consumers and strengthening education and capacity building, MSME have the power to drive ecological awareness in BOP settings. Similar to what literature suggests (see Munir et al., 2010), empirical evidence in this thesis suggests that MSME which are truly knowledge-driven have potential to create significant societal impact due mainly to investments in training and education of BOP. Further evidence for this argument is provided by one typology of BOP enterprises providing education and training related services for rural consumers. This typology of BOP enterprises clearly state their triple bottom line orientation which results in high economic, social and ecological performance.

In an attempt to investigate what drives MSME to integrate BOP in operations, the thesis proposed two drivers, namely normative orientation and motivation to overcome information asymmetries. Empirical findings support the idea that the key driver for MSME to engage in
co-creation with local actors refers to a general orientation of the firms towards concerns such as society’s well-being, poverty alleviation and ecological harm reduction. Moreover, findings suggest that local enterprises with more knowledge on local structures and systems are more likely to engage in co-creation activities. This finding provides further evidence to the claim that normative orientation is a key driver which motivates MSME to integrate BOP in operations and subsequently strengthen their social and ecological performance. It is precisely this normative orientation that determines MSME to move beyond their products and services and engage in various supporting activities which create more social impact and maybe. This focus on participatory approaches and engagement of local BOP communities makes MSME a key player for achieving the sustainable development goals agenda. Compared to the previously defined Millennium Development Goals (MDG), SDG entail an exclusive focus on local participation and local communities’ empowerment and engagement (United Nations, 2015). Therefore, the characteristic of MSME to actively engage BOP communities in value creation activities is well aligned with the SDG agenda.

The normative orientation is driven by the founders of MSME who have an intrinsic motivation to drive social change. This seems to be a central characteristic of enterprises involved in social change and social entrepreneurship, in both industrialized and developing countries. The role of founders, in particular the relationship between founder’s personality traits, organizational processes and performance is explored by the social entrepreneurship literature (Zahra et al., 2009; Mair & Noboa, 2006), hybrid organizations scholars (Battilana et al., 2015) as well as sustainable business literature (Stubbs & Cocklin, 2008; Bansal, 2002). Levänen et al. (2015) provide an alternative explanation for the strong normative orientation of the founders in the early stages of venture development and suggest that it may be caused by donor’s expectations, since many MSME receive funding from development agencies and donors in the early stages of development.

Since cross-sector partners often mediate the relationship between MSME and local BOP communities, it is possible that the initial normative orientation is further strengthened by such collaborations. Close collaboration between non-profit actors and MSME can result in similar ways of thinking and beliefs in regard to strategic and operational aspects (Hahn and Gold, 2014; Webb et al., 2010) which is also known as realigned contributions and gains (Le Ber &
Branzei, 2010). NGO emphasize the social impact in their partnership and alliances and may push MSME towards higher social impact.

Findings from this thesis also suggest that in the context of BOP markets, the nature of the product or service provided is an important driver of sustainable performance. Since most MSME engage in provision of basic services to satisfy basic needs, often their social impact is determined by the nature of the product and/or service offered. Additionally, sectors such as healthcare or energy have multiplier effects on many other aspects of life. A great fit between a strong social need, an ecologically friendly technology and a clear business proposition determines significant social and ecological impact in the local communities. MSME in the renewable energy sector bring electricity, heating and cooking solutions to rural BOP in remote locations and create significant social and ecological impact in local communities. Often these energy solutions are not available in the rural remote areas and therefore companies see this as a market opportunity. While this is an interesting insight and shows that firms may not always need to pursue explicit ecological or social goals in order to create sustainable performance, this also raises further questions. Since BOP consumers present significant cognitive and social vulnerabilities, the question is how can firms pursue solely economic goals and avoid exploitation of low-income markets’ vulnerabilities (Arnold & Valentin, 2013; Garrette & Karnani, 2010; Karnani, 2007).

**Further Research**

The finding that normative orientation determined by the founder is a key driver for MSME to integrate BOP consumers in their operations and consequently create sustainable performance in low-income markets demands for several priorities in research outlook. Firstly, it is important to understand how the normative orientation of founders in the early stages of the venture development can be formalized and embedded in the firm’s identity and organizational culture to ensure continuity (Stubbs & Cocklin, 2008; Bansal, 2002). Furthermore, empirical research should investigate to what extent the initial orientation of founder is caused by donor’s pressure and which changes can occur after the donor’s capital and influence is over. Secondly, further research should explore other drivers for firms to incorporate social and ecological aspects in their operations in low-income settings. Thirdly, this study has employed mostly perceptual
measures for social and ecological impact. One priority for further research is to collect quantitative data on actual social and ecological impact on local communities. This will provide a more accurate picture of sustainable performance in low-income settings. Similar to BOP inclusion, further studies should attempt to understand especially social impact, education and capabilities enhancement created by MSME from the BOP perspective and following a longitudinal research design.

6.5 Sustainability strategies as mechanisms for sustainable performance in low-income markers

Research gap and contribution

BOP debate has largely focused on socio-economic aspects of sustainability and left out unexplored aspects related to natural environment and ecology (Hart et al., 2016; Arnold & Williams, 2013). In an attempt to connect and advance sustainability research in the area of BOP markets, this thesis proposes two main strategies for sustainable development which incorporate both socio-economic aspects and ecological considerations, namely combination of sufficiency and efficiency approaches (1) and localization strategy (2).

Firstly, exploring for various aspects of ecological impact which can be derived by frugal innovations, it was found that frugal innovation can serve as a means to reconcile sufficiency with efficiency approaches. Frugal innovation promote decreased usage of production inputs and resources at different points in the production and consumption chains by emphasizing the “doing more with less”. Frugal products and services entail lower life-cycle costs, longer product life-cycles, lower gas emissions and noise emissions (Tiwari & Herstatt, 2012; Brem & Ivens, 2013). Developing frugal products enables higher resource efficiency, supply chain efficiencies and opening up new applications for existing technologies (Sharma & Iyer, 2012). While these efficiency approaches are useful and can significantly reduce costs, they are not sufficient to drive sustainable development goals (Ehrenfeld, 2005). Frugal innovations, by developing new, localized technologies based on natural processes, reuse of waste materials,
employment of human-centered design, reduction in complexity and focus on increasing ecological awareness through education and training can contribute with important sufficiency based approaches. Moreover, from the perspective of industrialized countries, frugality seen as a mindset promotes a new way of lifestyle with focus on increased standard of living based on free time and self-realization rather than materialism and consumption (Roiland, 2016).

Secondly, the multiple case study analysis of products and services commercialized in BOP markets reveal that operational approaches employ localization strategies for value chains and business models. There is a strong focus on localization of operations, products and services which include local raw material acquisition, local suppliers and producers, local production and distribution systems. Building on local systems and operating locally enables the creation of what London (2011) calls ‘social embeddedness’. Sustainability scholars often perceive localization as a requirement for a sustainable society and refer to ‘keeping capital local’ (Stubbs & Cocklin, 2008).

Further research

Research at the intersection between sustainability and low-income markets in developing countries is still in early stages and there are numerous gaps to explore. From the perspective of sustainability strategies employed, further research can explore the applicability, contributions and limitations of other important sustainability strategies, in particular sharing-based business models, low carbon solutions, product service systems, open innovation and social and biodiversity regeneration (Bocken et al., 2014).

6.6 Interdependencies between economic, social and ecological performance in low-income markets

Research gap and contribution

Traditional perspectives on sustainable development regard the three pillars, economic growth, socially inclusive development and environmental preservation as interdependent and these
interdependencies as trade-offs (Sachs, 2015; Hahn, 2009; UN World Summit on Sustainable Development, 2002). Sustainable business literature and management scholars have yet to develop frameworks and perspectives to understand how to manage sustainability dimensions in context of poverty which presents unique challenges (Khavul & Bruton, 2013). Empirical studies suggest that sustainable performance interdependencies may aggravate development efforts in BOP contexts because increased business efforts may drive industrial pollution which can have devastating impact on local communities (Gold et al., 2013; Yunus et al., 2010). Therefore, understanding the nature of interdependencies between economic, social and ecological performance in low-income settings is an urgent matter.

The analysis conducted in this thesis does not pinpoint to conclusive evidence on whether links between economic, social and ecological performance dimensions are trade-offs or synergies. Findings indicate that some MSME enjoy synergies while other face trade-offs. This means that while there are MSME which manage to combine social/ecological outcomes with economic outcomes, not all succeed. Therefore, this thesis provides limited empirical support for the main BOP proposition of combining profits with social objectives.

The research does not identify any relationships between the nature of the interdependencies and other variables, such as size, industry, nature of enterprise, but found that collaboration with MNC serves as a moderating variable for the nature of interdependencies. Small groups comparison based on the strength of collaboration with MNC uncover a positive relationship between social and economic performance and negative relationship between ecological and economic performance. This finding is congruent with the empirical results of De Beule and Verwaal (2014). In terms of relationship between ecological and economic performance, scholar suggest that frequently sustainability related investments are capital intensive and demand from organizations a medium to long-term perspective at the expense of short-term financial outcomes (Stubbs & Cocklin, 2008; Bansal and Roth, 2000). Therefore, ecological performance and its positive impact on economic performance may need more time to emerge from current MSME initiatives. An alternative explanation can be that MSME still struggle to sell ecological value propositions since their impact is not immediate, is less visible for local communities and accumulates at rather system level (Duke, 2016)
Further Research

Findings in this thesis demand for a more nuanced, detailed and focused investigation of BOP enterprises in regard to the interdependencies. Sampling out typologies of BOP enterprises in terms of the nature of the interdependencies they face is important because it can enable a better understanding of drivers affecting trade-offs and transfer of best practices from managing the interdependencies as synergies. Understanding the nature of interdependencies between economic, social and ecological performance is a very important research gap with critical implications for practitioners. Relevant insights in this area can guide efforts on how to design business models aligned with creation of synergies between economic, social and ecological benefits. Further research should advance our understanding of conditions and settings in which organizations face trade-offs or synergies. Secondly, as Hart et al. (2016) suggest, further research should develop tools and methods on how MSME can design their value proposition and business models in such manners that local communities find them relevant.
7 Practical Recommendations

Findings in this thesis provide impulses for recommendations for MSME, but also implications for other relevant groups of stakeholders, namely large companies, MNC, intermediaries, policymakers and cross-sector partners. As outlook, areas of interest for the different stakeholders according to the six typologies of BOP enterprises are defined.

7.1 Key lessons learned for MSME

Since this thesis adopts the perspective of MSME, there are several important implications and lessons learned which can be transferred for the practice of MSME. The sample in the study has included both foreign-driven and local growth-oriented enterprises and therefore several findings from this thesis provides valuable insights for both types of MSME.

This study suggests that developing business models in low-income settings is very challenging and there is need for innovative approaches to overcome existing barriers and difficulties. In this sense, first implications refer to how to design viable business models in BOP markets. The challenge lies mainly at finding a customer group willing/able to pay for the product/service and designing a value proposition both for the customer and for the end-consumer. This may imply that BOP business models need to evaluate with great considerations their consumers and customers in order to design a value proposition for both the end-consumer and for the customers who generate the revenue. Due to severe affordability constraints faced by BOP consumers, MSME can turn their attention at innovative revenue models, such ensuring a mix of low-income and wealthy consumers (Angeli & Jaiswal, 2016) or adopting fair-trade models which open new markets for BOP producers in industrialized countries. Moreover, MSME need to design their value propositions from the early stages of development to incorporate social and ecological benefits (Hart et al., 2016). While these benefits may be difficult to sell to BOP consumers, MSME can find alternative stakeholders with interest in driving social and ecological impact in BOP markets (e.g. governments, international foundations). Furthermore,
MSME have to design their business models with clear ideas of the interdependencies between economic, social and ecological performance. In this sense, it is important that they consider the direct and indirect impact of their operations, measure it in the long run to ensure adequate approaches and management. Moreover, MSME can create a value chain ecosystem which supports synergies between economic, social and ecological outcomes. These synergies can look differently depending on the sector and the adopted BOP model.

Secondly, especially relevant are the insights on the power of education, training and local capacity building. Even if the main product or service does not involve training and education, MSME can integrate further services related to education, advice and training provision to enhance the economic, ecological and social performance of their enterprises. Investments in such activities will create long-standing trust and commitment between the MSME and local communities which in turn will drive economic performance, social and ecological impact.

Thirdly, MSME need to take one step further to tackle challenges related to sustainable development and design their long-term strategy with a clear sustainability strategy in mind. These sustainability strategies employed need to go beyond efficiency based approaches and create new models of economic development which special regard to natural environment. They can focus on reduced product-based consumption and increased emphasis on service and circular based economy, can employ localization approaches for value chains or promotion of a new life style with focus on self-realization rather than materialism. There are many opportunities for sustainable innovations and BOP settings provide a fertile ground for bringing out new models, technologies and approaches.

Fourthly, this study has also important implications for partner selection of MSME. Since these enterprises have limited resources and face numerous challenges, it is important to create a small ecosystem of relevant partners and to operate together as a network. Working together and building up on each other’s competences and impact is the only way MSME can make a difference. In this sense, it is important to select the relevant partners wisely and focus on building long-term oriented relationships. In order to ensure mix of local and foreign knowledge, local growth oriented MSME can actively engage in partnerships with foreign MSME in order to combine local knowledge and legitimacy with foreign expertise and social
network. Moreover, the six typologies of enterprises show that the right partner selection is theme and sector dependent. For example, MSME which provide basic needs services to rural consumers located in remote areas can build on the expertise and network of local NGO for various value chain activities, including raising awareness and education campaigns. MSME which provide education and training services to BOP in rural areas can build on the local legitimacy and knowledge of community associations. Collaboration with MNC is not equally important for all groups of MSME. For instance, close collaboration with MNC is central for MSME which provide energy solutions for rural BOP consumers.

A key lessons learned is that innovation in BOP markets takes long time and MSME need to plan in the long-term and medium-term in order to fill in gaps for resources and finances. For doing so, collaboration with MNC, cross-sector actors and other MSME may serve as valuable approaches.

### 7.2 Implications for other relevant stakeholders

**MNC and large companies**

The engagement of large companies and MNC in BOP markets is still limited to several frequently recycled success stories. Empirical evidence suggests that MNC and large companies are still not very involved in BOP markets and this may be because they are still not aware of market opportunities at the BOP and/or may not be prepared to take high risks in opening new markets in BOP settings. Large local companies and MNC need to think beyond their focus on economic returns and develop a sustainability mindset within their organizations and among their stakeholders in order to gain sustainable competitive advantage. In order to combine both impact with economic returns, managers and investors need to spot market gaps and opportunities in BOP context and be patient, not to expect high returns in short time. Executives and managers should understand that BOP are markets with need for special adherence to ethical principles and values, rather than application of traditional economic frameworks. BOP consumers have low bargaining power and present social, financial and cognitive vulnerabilities. In these conditions, a focus solely on economic returns can easily lead to social and development catastrophes. Although BOP markets require numerous investments,
capabilities and resources and provide low returns, they also provide the perfect ground for large companies and MNC to improve the general image of corporations which has decreased significantly in the past decades (Porter & Kramer, 2011). While in industrialized settings large companies and MNC are often accused of engaging in social activities which directly translate in economic returns and savings (Yawar & Seuring, 2015), BOP markets provide the opportunity to engage in activities which go beyond firm’s core operations.

Due to their global network and capabilities, MNC suffer from the liability of ‘outsidership’ (Johanson & Vahlne, 2009) and find it very challenging to engage closely with local communities. In this sense, MNC and large companies can open up markets in BOP settings by building up on the local expertise and businesses developed by MSME. By doing this, large companies and MNC can support their growth, scale of economic, social and ecological impact and acquire new capabilities, skills and know-how (Seelos & Mair, 2007).

**International platforms, hubs and networks**

As a result of increased interest in BOP markets, there are numerous intermediary organizations such as hubs, networks and platforms targeting social entrepreneurs and MSME with numerous services, such as training, mentoring, technical advisory, funding and investor brokering services. BOP landscape entails a wide variety of such intermediaries and their service offering in terms of type, maturity and size of supported initiatives, scope, thematic and geographical focus. Yet, our study shows that MSME across sectors face different challenges depending on the development stage, need different partners depending on sector and models adopted, have different sustainability orientations and present different performance outcomes. Therefore, intermediaries should provide targeted services to MSME in specific sectors and at different stages of development. While in the early stages, MSME need guidance and support on how to match the social issues they want to address with an existing market opportunity, how to design a value proposition which is meaningful for customers and consumers and incorporates social and ecological aspects which are locally relevant. Later on, MSME need to find partners which can provide them with necessary knowledge, skills, capabilities and resources to replicate and scale their operations. For this purpose, intermediaries can provide support on how to find the right partners relevant for the enterprise and integrate education, training and capacity building.
services as part of the core operations of MSME. Intermediaries can also diversify their service portfolios with offerings related to balancing economic, social and ecological goals in the long run and synergies development between economic, social and ecological performance outcomes.

**Policy makers**

From the perspective of policies makers, there is need for targeted policies and support programs for MSME at different stages of development and policies to strengthen the links between MNC, impact investors, large companies, cross-sector actors and MSMS operating in BOP markets. Firstly, policy makers can develop targeted decision making and policies for different typologies of BOP enterprises, depending on their goals, partners and impact. Our typology of BOP enterprises can further guide customized impact measurement frameworks for specific themes since impact metrics can look different for various industries. There is need to measure impact in the long-run to ensure that the initial social orientation is not lost for economic value and policy makers can incentivize such efforts to ensure that current efforts are effective. Secondly, they can design policies and regulations to incentivize collaborative efforts between governments, MNC, investors, large companies and MSME. The combination of skills, resources, capabilities and orientations of different stakeholders can advance the fulfillment of sustainable development goals. In this area, policy makers have to tighten the regulatory framework around exploitation issues in order to protect low-income consumers. Thirdly, policy makers can promote and support increased visibility of individuals driving sustainable change in an attempt to educate a new generation of responsible leaders and role-models.

**NGOs, community associations and knowledge institutions**

Cross-sector actors include local NGOs, community associations and knowledge institutions who have important roles to play depending on sectors and geographical settings. First of all, NGO seem to be a valuable partner for several types of MSME operating in BOP markets. NGO can work together with MSME especially in sectors with no clear ecological impact in order to develop approaches for natural environment protection. They can also encourage MSME to define a clear sustainability strategy and support the implementation of such strategies on
tactical and operational levels. Knowledge institutions can support MSME especially in technology intensive sectors, such as healthcare, information and communication technologies (ICT) and banking and contribute with know-how and R&D capabilities in order to decrease the capital investments to be made early on by MSME. Since cross-sector actors are known to mediate the relationships between MSME and local communities, they need to ensure that the initial normative orientation of MSME does not change in the long-run in favour of economic logic and promote further aspects of sustainable development. In this sense, they can closely monitor MSME operating in BOP markets, measure their social and ecological impact and work closely to continuously adapt approaches to fit the need of BOP markets.

7.3 Overview: Recommendations and actions according to typologies of MSME

This sub-section builds on the typology of MSME developed in the thesis and formulates areas of action and specific recommendations for the typologies of MSME and relevant stakeholders (Table 1). The six typologies of MSMEs in BOP markets pursue different combination of goals, present distinct characteristics and partners and therefore require particular type of support services and actions. The four main groups of stakeholders (MNC and large companies, intermediaries, policy makers and cross-sector partners) represent key actors who can provide valuable support for MSME at different stages of development. The recommendations are developed from the perspective of MSME and focus on how various groups of stakeholders can support the growth and impact of MSME in BOP settings. The recommendations are developed based on a key issue identified as relevant for each typology. For example, for the typology education, training and employment supplier model often the common issue is how to open new markets for products sourced from the BOP since the revenue generated can finance training activities targeting farmers, artisans and local producers. Therefore, recommendations for this group of MSME revolve around partnering with large buyers, public procurement and incentives for MNC and large companies to source from such MSME.
### Table 1: Overview of recommendations

<table>
<thead>
<tr>
<th>Actor / Typology</th>
<th>Energy for urban BOP</th>
<th>Technology</th>
<th>Basic needs for rural BOP</th>
<th>Education, training and employment for rural BOP</th>
<th>Education, training and employment supplier model</th>
<th>Energy for rural BOP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MNC and local large companies</strong></td>
<td>Support MSME through scaling capabilities and know-how, patient capital, grants and investments.</td>
<td>Develop joint business models and build on local legitimacy and expertise of such MSME.</td>
<td>Support MSME through scaling capabilities and know-how, patient capital, grants and investments.</td>
<td>Develop joint business models and build on local legitimacy and expertise of such MSME.</td>
<td>Open up markets for products sourced from the BOP.</td>
<td>Support MSME through scaling capabilities and know-how, patient capital, grants and investments.</td>
</tr>
<tr>
<td><strong>Intermediaries</strong></td>
<td>Support services on how to design value propositions to ‘sell’ ecological benefits to local communities.</td>
<td>Connect MSME with relevant partners such as international and national high-tech labs for R&amp;D activities.</td>
<td>Support services on how to integrate education and capacity building elements into existing business models.</td>
<td>Support development of viable business models for MSME promoting ecological awareness.</td>
<td>Support MSME to partner with the large buyers.</td>
<td>Connect various actors in the renewables and clean energy sector to exchange best practices and know-how.</td>
</tr>
<tr>
<td><strong>Policy makers</strong></td>
<td>Incentivize MNC and large companies to engage in such projects; raise awareness of existing market opportunities.</td>
<td>Incentivize and promote MSME based on green technologies.</td>
<td>Incentivize and promote state-owned agencies (e.g. hospitals, schools) to employ products and services of such MSME (e.g. e-healthcare, banking).</td>
<td>Incentivize and promote state-owned agencies (e.g. hospitals, schools) to employ products and services of such MSME (e.g. e-healthcare, banking).</td>
<td>Support MSME through public grants and subsidies.</td>
<td>Subsidize through electrification programs to reduce the initial capital costs and the price of energy for rural BOP.</td>
</tr>
<tr>
<td><strong>Cross-sector partners</strong></td>
<td>NGOs: Raise awareness on ecological and health benefits of clean technologies.</td>
<td>Community associations: promote and transfer legitimacy for such MSME.</td>
<td>NGOs: Promote models based on functionality rather than ownership to reduce consumption levels.</td>
<td>Community associations: promote and transfer legitimacy for such MSME.</td>
<td>NGOs: Support and measure the impact on local BOP producers.</td>
<td>NGOs: create awareness among rural BOP consumers on the impact of electricity on other aspects of life.</td>
</tr>
</tbody>
</table>

Knowledge institutions: contribute to initial R&D and technology development to reduce initial capital investments.
8 Conclusion

This thesis investigates sustainable business concerns in the context of poverty. Current literature scarcely addresses how innovation and business management can enhance sustainable development efforts in contexts with unique challenges inherent to poverty (Khavul & Bruton, 2013). A current review article in Management Science by Lee and Tang (2017) suggests that focus on emerging and developing economies, integration of economic, social and environmental responsibility and shared-value creation between stakeholders such as consumers, producers, social enterprises and NGO represent key industry trends for management researchers to incorporate in their work. The increase in different terms used through various research disciplines and streams pinpoint to an increasing interest in addressing environmental protection, poverty and global inequality concerns. Diverse terms used in various research streams - frugal innovation, BOP, inclusive development, responsible innovation, shared value creation, resource stewardship, sustainable innovation, social entrepreneurship or hybrid business – have one thing in common: they all emphasize a paradigm shift in the traditional logic of economic value creation pursued by firms towards integration of social and ecological business. Current framework conditions do not support Friedman’s (1962) influential ideas that if a firm does not make profit, it loses its competitive edge. In fact, firms which will not create social and ecological impact, can lose legitimacy, trust and in turn their competitive edge in the long-run. This paradigm shift brings challenges for companies especially for MNC whose dominant logic has been shareholder value maximization. MNC have already lost significant legitimacy in the past decades with Porter and Kramer (2011) arguing that corporate legitimacy has fallen ‘to records not seen in recent history’. In order to re-gain (or maintain) their competitive edge, MNC need to change the way they do business. Traditional economic and management frameworks based on the implicit assumption of economic value creation are not suitable in the new external environment context. For this purpose, management scholars need to re-think these frameworks to ensure that MNC remain competitive in this new phase of globalization and contribute actively to societal development and natural environment preservation. Low-income settings provide a fertile ground to explore
new approaches, mechanisms, technologies and performance trade-offs. Sustainable value creation for low-income markets may enable reverse flow of theory development effort challenging traditional paths of transferring empirical findings from industrialized countries to developing economies. The examples of responsible leadership, ethical behavior and sustainable innovation in low-income markets can serve as inspiration and guidance for a new generation of responsible leadership of MNCs in industrialized settings.

This thesis has investigated an alternative model where MSME work towards the integration of economic value creation, societal development and ecological preservation. In this model, MSME engage low-income consumers in their operations, collaborate with cross-sector actors and MNC in order to develop approaches, tools and methods for new ways of doing business. This work provides implications towards this direction, amendments to current theoretical frameworks and impulses for further research in the area of business efforts for sustainable development goals.
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Zilber, T. B. (2002). Institutionalization as an interplay between actions, meanings, and actors: The case of a rape crisis center in Israel. *Academy of Management Journal, 45*(1), 234-254
List of publications

Note:
This list of publications does not include the four journal articles which are part of the doctoral thesis.

Journal Papers:

Book Chapters - Conference Proceedings:
List of publications


Conference Presentations Only (by E. Rosca):


Appendix: Empirical study on BOP MSME - The questionnaire

Note:

This questionnaire was developed based on extensive literature reviews and iterative rounds of feedback with academic peers and practitioners. The survey data was used for paper 3 and 4 of this thesis. However, the survey contains more information.

The table below provides the source and/or status for all survey questions in order to specify whether they are own development or have been adapted/adjusted/inspired from the literature. All items and questions have been adapted for wording and phrasing as a result of iterative rounds of feedback with practitioners and academic peers.

<table>
<thead>
<tr>
<th>Question(s)</th>
<th>Status and references</th>
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<tbody>
<tr>
<td><strong>Section I: Gaining local knowledge</strong></td>
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<tr>
<td>Internal and external challenges</td>
<td></td>
</tr>
<tr>
<td>Question 3: General situation</td>
<td>Own development based on iterative rounds of feedback with practitioners and academic peers.</td>
</tr>
<tr>
<td><strong>Section II: Business model</strong></td>
<td></td>
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<tr>
<td>Question 6: Main customer group</td>
<td>Own development based literature reviews and iterative rounds of feedback with practitioners and academic peers.</td>
</tr>
<tr>
<td>Question 10: Current stage of business</td>
<td>Adapted from Business Call to Action (2014). <em>Breaking through inclusive business and the business call to action today. Mapping</em></td>
</tr>
</tbody>
</table>
Appendix

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<tr>
<th>Questions 11 and 12: Sources of funding</th>
<th>Own development based literature reviews and iterative rounds of feedback with practitioners and academic peers.</th>
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</thead>
<tbody>
<tr>
<td><strong>Section III: Long-term orientation</strong></td>
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<tr>
<td>Question 15: Founder’s role</td>
<td>Own development based literature reviews and iterative rounds of feedback with practitioners and academic peers.</td>
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<tr>
<td><strong>Section IV: Involvement of local actors in your business activities</strong></td>
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<tr>
<td>Question 17: Cross-sector partners</td>
<td>Own development based literature reviews and iterative rounds of feedback with practitioners and academic peers.</td>
</tr>
<tr>
<td>Question 21: Collaboration with MNC</td>
<td>Own development based literature reviews and iterative rounds of feedback with practitioners and academic peers.</td>
</tr>
<tr>
<td><strong>Section V: Business performance</strong></td>
<td></td>
</tr>
</tbody>
</table>
| Question 23, 30 and 31: Economic, social and ecological performance | Items adapted from De Beule et al. (2014). De Beule, F., & Verwaal, E. (2014). Does the quality of institutions impact the profit motive to do good for the poor? A contingent resource-based view on inclusive strategies at the “base of the pyramid”.
InTechnology: *Corporate and Social Dimensions* (pp. 357-388). |
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<tbody>
<tr>
<td>Question 24, 25, 28 and 29: Profitability, sales growth, key policy documents</td>
<td>Own development based literature reviews and iterative rounds of feedback with practitioners and academic peers.</td>
</tr>
<tr>
<td>Question 32: Digitalization</td>
<td>Own development based literature reviews and iterative rounds of feedback with practitioners and academic peers.</td>
</tr>
<tr>
<td><strong>Section VI: General information about you and your company</strong></td>
<td><strong>Questions 33 – 39: General info</strong> Own development based literature reviews and iterative rounds of feedback with practitioners and academic peers.</td>
</tr>
</tbody>
</table>
| Question 40: Enterprise type | Adapted from De Beule et al. (2014) De Beule, F., & Verwaal, E. (2014). Does the quality of institutions impact the profit motive to do good for the poor? A contingent resource-based view on inclusive strategies at the “base of the pyramid”.
InTechnology: *Corporate and Social Dimensions* (pp. 357-388). |