



# UNIVERSITY OF GOTHENBURG

## SCHOOL OF BUSINESS, ECONOMICS AND LAW

**Sustainability as an opportunity: Value creation for innovative ventures through proactively tackling environmental and social issues.**

A study on LibriXer AB about reducing water pollution by recycling unused pharmaceuticals.

**Master's Degree Project in Knowledge-Based Entrepreneurship**

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# LIBRIXER

Gothenburg, June 2021

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## **Abstract**

This thesis argues that Sustainable Business Model Innovation should be considered an essential process for small- and medium-sized enterprises to create value. In order to establish a sustainable value proposition, the researchers propose that social, economic and environmental attributes have to be considered from the start of a Business Model Innovation process and that social and environmental aspects cannot simply be added to an existing Business Model. In doing so, the authors describe the necessary Business Model Innovation process for small- and medium-sized enterprises and the various benefits that it can provide, aiming for including all three aspects of sustainability. The qualitative exploratory research design provided the authors with data from both indirect and direct stakeholders of the case company, as well as experts within sustainability and business in Rwanda.

Business Model Innovation has been growing in academia in recent years and stems from the research on Business Models that gained popularity in the dot-com era. The core of Business Model Innovation is that a company must challenge its Business Model often not to become outdated. By that logic, the authors argue that sustainability can be an opportunity for ventures if a correct Business Model Innovation process is applied.

The authors present three key findings from the conducted research. First is the importance of the Sustainable Development Goals. While the goals act as a currency and reference for ventures, they must be iterated alongside the viable proposition during the innovation process. Also, small- and medium-sized enterprises need to identify an environmental or social problem that is specific to the region of interest. Therefore, it is important to consider local issues that the company's value proposition can help to solve. In the long-term, it helps to gain trust from stakeholders such as governments, investors and communities. Lastly, companies need to involve the mentioned stakeholders earlier and to a higher degree than when conducting business with a purely economic purpose. That type of involvement is often overlooked, but nevertheless, it increases the likelihood of local value creation and mitigates potential risks. The contribution from this thesis can act as a basis for further research, especially for small ventures that see Sustainable Business Models as a valid opportunity to create value.

The investigation carried out in this thesis studies an innovation in the milling industry owned by a Swedish company called LibriXer AB. The venture offers separation and comminution solutions for business customers in the fields of food and mining as well as recycling and provides instant material separation through a new process. Instead of milling materials by crushing them against two surfaces, the LibriXer mill uses an airstream to separate the material in its natural boundaries. The company has a fuzzy Business Model, has sustainable aspirations, and owns a technology that can create economic, social and environmental value.

**Keywords:** Sustainable Business Model, Business Model Innovation, Sustainable Development Goals, Opportunity Recognition

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## List of abbreviations

BM	–	Business Model
BMI	–	Business Model Innovation
BMC	–	Business Model Canvas
NGO	–	Non- Governmental Organization
SME	–	Small- and Medium-Sized Enterprise
SBM	–	Sustainable Business Model
SDG	–	Sustainable Development Goal
SBMI	–	Sustainable Business Model Innovation
SBMC	–	Sustainable Business Model Canvas

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# 1. Introduction

The term *sustainability* has recently been subject to increasing popularity in the corporate world (Nosratabadi, Mosavi, Shamsirband et al., 2019; Spiliakos, 2018). According to a report by KPMG (2020), 80% of surveyed companies worldwide and even 96% of the world's 250 biggest companies provides a sustainability report. However, in contrast to that, small- and medium-sized enterprises (SMEs) account for only 10% of the total sustainability reporting (International Portal for Sustainability Reporting, 2016). Nevertheless, sustainability reporting does not always mean that a company is actually applying sustainability, but it is an essential aspect of the route to a more sustainable world. The promise of companies to preserve the environment and raise social equality became a mantra of the 21<sup>st</sup> century, and sustainable development is amongst the most urgent and challenging tasks for firms (Ploum, Blok, Lans et al., 2018; Dyllick and Hockerts, 2002).

There are numerous definitions of sustainability, and merely uttering the word generates discussions, interpretations and argumentations. Today, the term is so frequently used that it can be argued that it has lost its meaning. In an article more than ten years old, Kuhlman and Farrington (2010) argue that the purpose of the word has changed from being concerned with mankind's strive for a better life within the limits imposed by nature to include the three dimensions of environment, social and economic, called the Triple-Bottom-Line. The same article also argues that this change in meaning is not beneficial for the sustainability discussion. It has been shown that just adding sustainability to an existing Business Model (BM) is not the correct way of incorporating sustainability. In these cases, the Triple-Bottom-Line definition can be harmful.

A BM can be described as a vehicle for innovation because there are different ways to commercialize a product or a service (Fallahi, 2017; Björkdahl, 2009). For a company to always have a viable BM, it is imperative to reconsider the BM. When new entrants create competition, a new product or service is developed, market conditions are changed, or new market entry is required, a company might need to innovate its BM. The process of redesigning and iterating the BM is called Business Model Innovation (BMI) and can be expressed as transformation or renewal of an existing BM (Demil and Lecocq, 2010; Nosratabadi et al., 2019), BM diversification (Nosratabadi et al., 2019; Kim and Min, 2015) or when the BM is fuzzy or non-existent, creation of a new BM (Nosratabadi et al., 2019).

Today, when sustainability is such an important aspect for companies and organizations, it is relevant to investigate how businesses can innovate their BM with the influence of environmental and social aspects. Also, since SMEs are 90% of all companies and provides more than 50% of the employment in the world (The World Bank, n.d.), it is interesting to see how SMEs can utilize BMI to create business opportunities. One tool for helping businesses innovate their BM with these considerations is the Sustainable Business Model Canvas (SBMC), as presented in an article by Joyce and Paquin (2016). This tool is based on the original Business Model Canvas (BMC), developed by (Osterwalder and Pigneur, 2010), which treats the economic layer of the Triple-Bottom-Line. The SBMC is central in this thesis, in addition to a model by Heikkilä, Bouwman and Heikkilä (2018) that showcases the BMI path for a company creating a new BM. Both are presented in chapter 2, Literature Review.

## **1.1 Problem Discussion**

As of today, sustainability plays a vital role within businesses as well as within research (Nosratabadi et al., 2019). However, the term has lost much of its initial intended meaning, and left is a commonly used buzzword. As described by (Schaltegger, Ludeke-Freund and Hansen, 2012), sustainability is widely spread as an ad hoc measure to create economic value instead of an implementation into the core BM of a venture. Therefore, despite being such a commonly used term, there is only a small number of SMEs where it is thoroughly applied. The literature describes different concepts of corporate sustainability and Business Model Innovation (BMI), and the concepts have existed within the research for approximately 20 years. Despite the existing literature, there is only a small amount of research on the potential opportunities which arise from Sustainable Business Model Innovation (SBMI). The authors aim to better understand the necessary BMI for SMEs to apply a SBM as an opportunity. It contains how a company can utilize existing activities and techniques while adding necessary new features to capture and create value. That approach follows and adds components to the idea of a BM by (Teece, 2010) about the delivery, payment and profit of a company

Contrary to Kuhlman and Farrington (2010), this thesis argues that the Triple-Bottom-Line should still be considered, and its purpose is to show how to combine all three aspects beneficially for SMEs. These aspects should be considered from the start, creating a new Sustainable Business Model (SBM) from the ground and up. While some companies and products that act in the market do fulfill the requirements of being sustainable, many also engage in the deceptive act of greenwashing (Delmas and Burbano, 2011). They do not add value to social or environmental problems; they only appear to do so. Davis (1992) describes the use of such “green” products as an unconscious contribution to environmental and social deterioration.

Just a fraction of the companies includes environmental and social values into the core of their BM (Schaltegger et al., 2012). That is probably a reason why the theory of sustainable BM has developed as add-ons to conventional BMs. Schaltegger et al. (2012) also mention that a more common usage is ad hoc actions often related to marketing and brand building. The creation of economic value for shareholders, which is to earn a return to the owners, is the main reason companies exist, both for new ventures and incumbents. In many cases, sustainable actions are considered a necessary evil and expense and seldom as an opportunity. In recent years, the interest in combining environmental and social value with economic value has grown within the business world. The theory describing these changes lies within the area of BMI, and the change in inputs of a BM requires an adapted output and vice versa. More novel, though, is the creation of sustainable business cases as the main driver for a company’s economic growth. The idea is to strategically create economic value by addressing and working on environmental and social issues (Schaltegger et al., 2012).

## **1.2 Purpose and Research Question**

There is evidence for the increasing importance of sustainable BMI in academic research (Nosratabadi et al., 2019). However, a smaller amount of literature can be found regarding the process and the opportunity to innovate the BM with regard to sustainability. Therefore, the core of this thesis is to iterate an existing BMI process towards an outcome that increases the economic, environmental and social value. In-depth, the aim is to define a process that helps SMEs innovate their BM, focusing on sustainable attributes, which eventually raise the created value. Moreover, there is a need for impartially investigating this to discover if there is a



positive correlation between doing good and creating economic value for a company and its shareholders.

This thesis aims to develop and iterate a framework for SMEs to include sustainability in the core of their BM. Furthermore, the authors aim to provide reasoning for ventures regarding BMI in developing countries, exemplified by Rwanda. Also, the thesis demonstrates the process towards a sustainable business case by applying SBMI in a case company. Therefore, the purpose of this thesis is to explore further the process of SBMI and how it can create opportunities for SMEs. The research, therefore, investigates the abilities of companies to enhance economic, social and environmental value by innovating their BM.

The research questions are:

*RQ1: How can environmental or social issues influence how small- and medium-sized enterprises innovate their Business Model?*

*RQ2: How can a Sustainable Business Model be applied to create a potential Business Case within pharmaceutical waste for LibriXer in Rwanda?*

### **1.3 Disposition**

For easiness and clarity for the reader, the thesis is disposed into seven chapters that reflect the activities of the authors and the process. The introduction chapter explains the background, the case company and case country, the purpose of the thesis, the research questions and the necessary delimitations. Next, the authors proceeded with a literature review, covering the relevant theories that can be applied to the research. Simultaneously and in an extensive number, the authors conducted preparatory interviews and data collection to fine-tune which theories to apply. This prior data collection is described further in the third chapter, where the methodology is presented. Here, the authors show the different approaches to research design, strategy, data collection and an objective review of the research quality. What follows after methodology is the empirical findings. The authors present the collected data from the interviews in a set structure stemming from a model presented in the literature review. Following the same model, in chapters five and six, the authors then present the thematic analysis of the data and the discussion before the conceptualization and further research are presented. Finally, the seventh chapter summarizes the thesis with a conclusion.

### **1.4 Delimitations**

Certain delimitations are apparent in this thesis and need further explanations. The authors study LibriXer as the case company and narrow down the scope to sustainable BMI based upon implementation in Rwanda. It should be kept in mind that social and political situations in Rwanda are subject to frequent changes and that Rwanda's history and current governance are not brought up. With an exploratory research, the thesis focuses on the current situation of LibriXer to keep the collected data precise and sophisticated. Furthermore, incentives for sustainability on a technical product development level are not taken into consideration. Lastly, theories explaining how a company internationalizes have not been evaluated because of the scope and purpose of the thesis.

## 2. Literature review

*The literature review chapter aims to provide the reader with the underlying theories to understand the research area better. The research aims to connect the theories behind BM, BMI and sustainable BMs with the successful creation of business cases. Therefore, the theories are split into two main parts. First comes the theory about business model innovation. It starts with the opportunity recognition before the innovation process and connects the venture's abilities with the possibilities. Then the actual innovation is described. Also, a tool called the business model canvas is presented, which is commonly used within entrepreneurship. After that, theories about the sustainable business model and sustainable business model innovation are presented. Here, an explanation of the added environmental and social layer to the economic business model canvas is presented.*

### 2.1 Business Model Innovation

The process of redesigning and iterating the BM is called, as stated, BMI. The process can be expressed as transformation or renewal of an existing BM (Demil and Lecocq, 2010; Nosratabadi et al., 2019), BM diversification (Nosratabadi et al., 2019; Kim and Min, 2015) or when the BM is fuzzy or non-existent, creation of a new BM (Nosratabadi et al., 2019).

#### 2.1.1 The Business Model Innovation process

BM as a subject has been of great interest for both practitioners and academics for more than 25 years. Already in 2011, more than 1177 articles had been published on the concept of BMs in peer-reviewed journals (Zott, Amit and Massa, 2011). The popularity of the term in academia closely follows the dot-com boom and its burst during the 1990s and early 2000s (DaSilva and Trkman, 2014; Geissdoerfer, Vladimirova and Evans, 2018; Zott et al., 2011). When studying the vast literature, most well-cited articles seem to have been written in the 2000s and 2010s (Fallahi, 2017). A BM has been described, amongst other definitions, as customer-centric (Teece, 2010), focusing on value creation (Zott et al., 2011; Amit and Zott, 2001) and value capturing (Shafer, Smith and Linder, 2005; Chesbrough, 2007; Chesbrough and Rosenbloom, 2002). However, despite various approaches, there is no clear concept of what a BM is. The lack of definition seems not to discourage researchers from continuing to study the concept and conceptualize it. In one of the most cited articles, Teece (2010) describes the BM as a hypothesis from the manager's point of view regarding what the customer want. This is the customer-centric view that is shared and expanded in a later work by Baden-Fuller and Haefliger (2013) who writes about the customer needs and customer satisfaction. Another popular view is that the BM is the facilitator that gives the BM a role of bringing value to technology.

The literature on the concept of BMs is not as vast as other business-related subjects. Though important, it has produced much debate about definitions and classifications rather than discussing the components of a BM and BMI (Baden-Fuller and Haefliger, 2013). Evolving from the early research on BMs, the concept of BMI has attracted increased attention since the early 2000s (Fallahi, 2017). Since then, it has evolved and can be considered its own field of research (Foss and Saebi, 2015). In one of the earliest articles on BMI, Mitchell and Coles (2003) argue that before the 1990s, companies that found a working BM did not innovate it. These companies simply continued with the BM that worked and tried to get rid of costs. The actual BMI was carried out by new entrants which the incumbents sometimes acquired. This

fact gave increased inertia as an outcome of trying to maintain the existing BM, as opposed to BMI.

In an article by Heikkilä et al. (2018) BMI is set against the strategic goals of SMEs. They identified three different BMI paths, namely: to seek growth, to seek profitability and to start a new business. The findings of the article show that depending on the strategic goal of a company, SMEs innovate different components of the BM. The model is based around the BM canvas provided by Osterwalder & Pigneur (2010) and shows which parts of the BM canvas that are being innovated at which stage of the company's path. The path of new business development is a much more iterative process than the two other and involves building the BM continuously throughout the BMI process (Heikkilä et al., 2018). Also, it stresses the importance of continuous testing to mitigate uncertainty, as stated in a previous article by McMullen and Shepherd (2006).

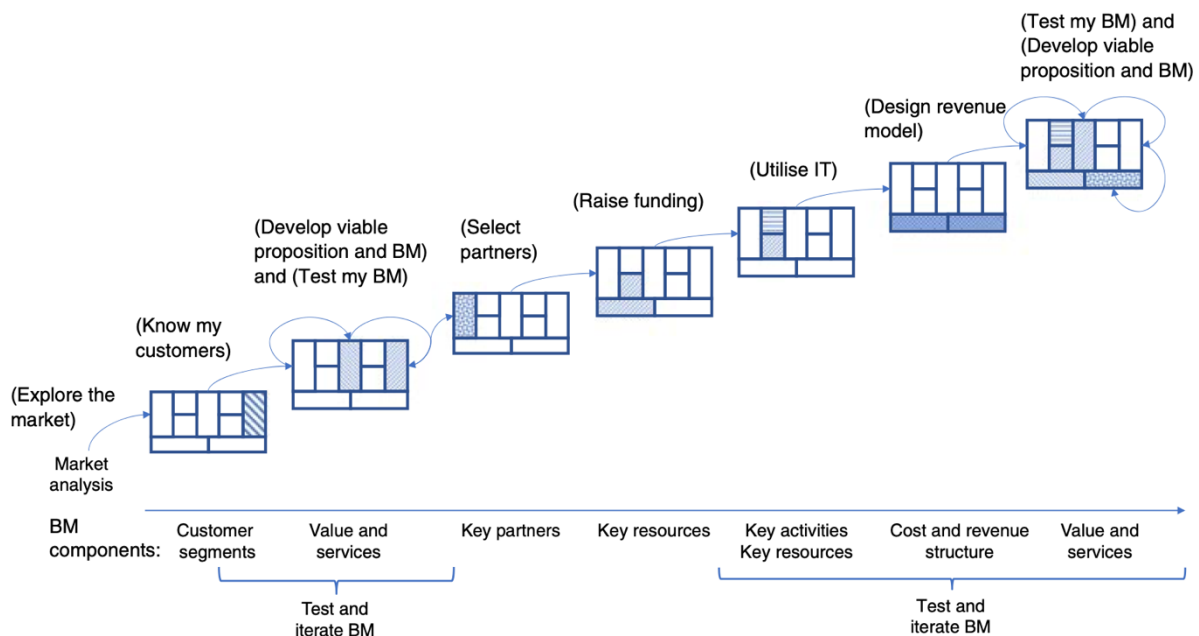


Figure 1. Business model innovation for starting a new business by Heikkilä et al. (2018).

### 2.1.2 Opportunity recognition

Opportunity recognition is often seen as the first step in an entrepreneurial process, followed by the creation and exploitation of value (Arenius and Clercq, 2005). It describes the progress in an individual or a firm to discover and rate future possibilities. Throughout the years, it became a major concept within entrepreneurship (Ploum et al., 2018). Ardichvili and Cardozo (2000) name three significant attributes that define opportunity recognition:

- **Prior knowledge:** The outcome of prior education and experience within a specific field.
- **Experience:** Describes a variety of possible influences such as prior personal experiences or attended events.
- **Alertness:** The overall openness to discover influences from the outside.

In addition to that, the literature suggests adding a fourth point as described by Arenius and Clercq (2005):

- **(Entrepreneurial) network:** An individual's or group's connection amongst each other.

Anderson, Park and Jack (2007) mention the access to a network as a key driver for a company's success. However, they also state that it is not a resource that is either existing or not; it rather facilitates the appearance of resources. Regarding sustainability, prior knowledge and commitment for change, motivation, and entrepreneurial knowledge lead to opportunity recognition for sustainable development (Ploum et al., 2018).

Concerns about the environment have been ignored and received very little attention from the economy for a long time (Aragón-Correa, 1998). Therefore, even more important is an immediate shift of capabilities of firms towards the preservation of the environment. Corporate approaches on all levels (operative and strategy) have to be done in order to realize the necessary changes (Aragón-Correa, 1998). It is, therefore, crucial to take immediate action and align corporations on a proactive approach. Other than a *reactive* business or management where the action is caused by prior events, a *proactive* style deals with happenings before they arise. By that logic, it deals with much more assumptions and uncertainties. Elijido-Ten (2017) refers to that as a wait-and-see approach with a very passive attitude. A proactive approach has a major effect on the BM and vice versa, according to (Schaltegger et al., 2012). That is seen critically by businesses since it challenges existing structures and creates uncertainties. However, the literature explains possible positive effects on the economy for firms by applying such proactive measures for social and environmental values. More than only accommodative or even defensive strategies, a proactive strategy develops value propositions that are not available elsewhere and therefore increase sales and profits (Schaltegger et al., 2012).

### 2.1.3 Business Model Canvas

The Business Model Canvas (BMC) is a tool for businesses to revisit or redesign their BM, as well as for entrepreneurs to develop a viable business. The first aspect to clear out is that the BMC is a tool rather than a theory that emerged from scholars. It was developed by Osterwalder and Pigneur (2010). The BMC is built up of nine different fields representing the most important aspects to consider when inventing or redesigning a BM. It also splits these fields into certain sides of the canvas to highlight their joint affiliation. Below follows an explanation about the different fields of the BMC in order in italics, based on the book by Osterwalder and Pigneur (2010):

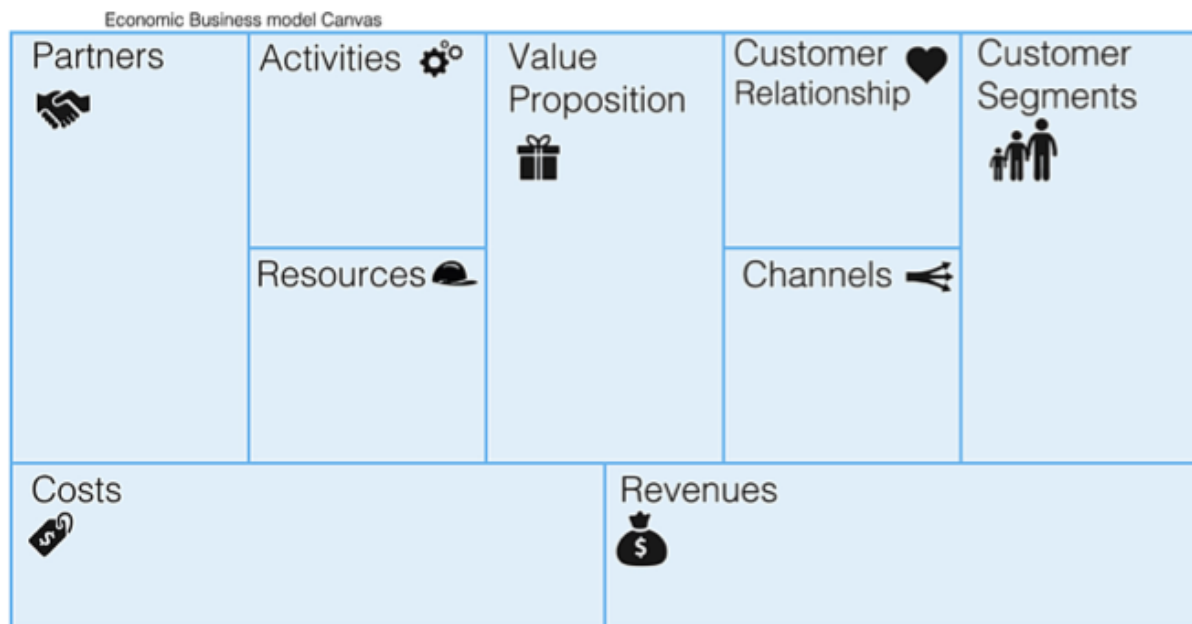


Figure 2. The economic layer of the Triple-Layered Business Model Canvas (Joyce & Paquin, 2019)

The first field to consider is who the customers and users are of the product or service. It can mean dividing up, for example, paying customers, heavy users, and free users to better understand them. In some cases, the value proposition is the same for all of them, and in some cases, there is a unique *value proposition* for each of the segments. The company might be conducting business with an organization, and therefore have to act completely different than towards a private person. The *value proposition* is the foundation of the model and shows what value a set of products or services is bringing to the customer. *Channels* describe how the business interacts with its customers and how the value created is brought to the customers. The third aspect, customer relationships, is not more complicated than thinking about how and which relationships that the business wants to establish with its customers. The revenue streams take into consideration how to capture the value created by the BM. Value capture is crucial for businesses because of the fact that regardless of how good a product or service is, a business could fail if it cannot capture enough of the value created. On the left-hand side of the BM Canvas, the infrastructure on how to deliver the value to customers is found. *Key activities* shows which undertakings that a business needs to perform at its best of its capabilities. Since a business often does not own all key resources or performs all key activities, this segment shows the importance of the partners leveraging the BM.

Lastly, when a good understanding of the infrastructure, within the company, on the left-hand side exists, the business needs to identify how much they pay for these services. That aspect is found in the *costs* field. Next to the cost field is the *revenue*, which display the expected sources of income that a company creates by conducting its business(Osterwalder and Pigneur, 2010).

## 2.2 Sustainability on a corporate level

This section aims to present the relevant information about sustainability in businesses and how it can be applied. The authors therefore provide a summary about the dimensions of corporate sustainability as well as a description of the Triple-Layered BMC. The section concludes with a presentation of sustainable business cases.

### 2.2.1 Sustainable companies

Sustainable behavior is knowingly and unknowingly misused within businesses to satisfy stakeholders and especially shareholders. The enhanced profitability of sustainable actions is in many cases more important than the actual value for society or environment (Leszczynska, 2012). Corporate sustainability requires a broader view than it is usually seen by economists or ecologists (Dyllick and Hockerts, 2002). Since a business is an actor in a continuously changing environment, all three layers have to be regarded in order to achieve sustainability. Dyllick and Hockerts (2002) therefore split cooperate sustainability into three fields and define the three dimensions as:

- *Economically sustainable* companies, which focus on an optimized flow of value towards their shareholders.
- *Ecologically sustainable* companies have the preservation or improvement of the environment as the outspoken goal. Value is created through the use of renewable resources under their reproduction time. The environmental footprint is therefore minimized.
- *Socially sustainable* companies increase the social capital of their stakeholders and, therefore, the social capital of their surrounding community. They comprehensively treat values and support their stakeholders to understand them.

Without the consideration of all three layers to a similar weighting, meaning focusing on one layer more than the others, a company cannot behave thoroughly sustainable. An overview is provided below from Schaltegger, Hörisch and Freeman (2019). Research refers to that argument as the 3Ps (Planet, People, Profit) or the Triple-Bottom Line (van Marrewijk, 2003; Elkington, 1997). Important to note is the differentiation between Corporate Social Responsibility (CSR) and Corporate Sustainability (CS). CSR is the inward-looking responsibility a company considers to minimize adverse outcomes by its business activities (van Marrewijk, 2003). However, CS takes the needs of future generations into account and includes measurements that create value that does not directly affect the firm to date.

### 2.2.2 Sustainable Business Model Canvas

SBMs are in the literature based around the concept of the Triple-Bottom-Line approach (Elkington, 1997), which takes into consideration the environmental, social and economic aspects of the BM. It is reflected in the Triple-Layered BMC, which adds two more layers to the original BM canvas, namely the environmental and social (Joyce and Paquin, 2016). The original BM canvas is a well-established tool that was created to support BMI from the economic point of view (Joyce and Paquin, 2016; Osterwalder and Pigneur, 2010).

Innovation for sustainability is a fragmented area of research with a lot of conceptual papers, and innovative approaches have the potential to contribute to BMI for sustainability (Bocken, Short, Rana et al., 2014).

The Triple-Bottom-Line approach of considering environmental, social and economic aspects to be able to include sustainability in an offer brings in two new canvases as tools, similar to the BM canvas. Below follows an explanation of all fields in the respective canvas accordingly, in the same order that Joyce and Paquin (2016) bring them up. Note that all fields do not necessarily match the order of the economic BM canvas but are adapted to fit the respective order. Figures of the following canvases are found in the appendix.

## Environmental life cycle business model canvas

In the environmental BMC, the first aspect to consider is the *functional value*. This refers to the outputs of a product or service. Often, it is by some means quantified in physical terms, which in some cases can be hard actually to do. On the left-hand side, the environmental impact or benefit is considered by first looking at *materials*. From where are the materials used to build a particular product sourced? It can be tough to look at all possible materials that an organization use, but those affecting the core business should be included. Above, with the same logic as with materials, *production* looks at the impacts or benefits occurring when producing the product or service in question. *Supplies and outsourcing* showcases activities that are, as opposed to the two above, activities not core to the business but that still occur as a functional value for the business. These will vary greatly depending on which type of company is studied. The *distribution* field is perhaps the most similar aspect to the economic BM canvas. The difference when it comes to the environmental layer is that one must take into consideration the type of transportation such as airplane, boat, train or truck, the distance traveled, the weight of the delivery, packaging and other distribution logistics. By *use phase*, a consideration of the customers' usage of the product is made. Examples could be service and reparation, the customer usage of materials and energy consumption. All products have an *end-of-life*, and it can happen in many different ways. A product can be scrapped entirely, recycled, refurbished or remanufactured. It is, therefore, important to examine how the end-of-life for a product really is to get the complete picture. At the bottom of the canvas, there is *environmental impacts*. Instead of showing an organization's costs in monetary terms, the environmental layer shows the ecological costs. It can be both bio-physical measures such as for example carbon dioxide emissions, health, usage of natural resources, or measures more closely related to standard business metrics such as energy and water consumption. The last aspect to consider is the *environmental benefits*. Contrary to impacts, this is the ecological benefits that a business contributes to, such as reducing impacts or increase ecological value. This can be benefits generated through exploring product, service or BMI (Joyce and Paquin, 2016).

## Social stakeholder business model canvas

Moving on to the social layer of the BMC, the first aspect is the *social value*. This is the core of the canvas and considers which social value a business creates for its stakeholders and society more broadly. For the *employee* field, it is essential to look at the employee as an important stakeholder and the broader picture around the employee such as, for example, ethnicity, salary, gender and family. Also, one must not forget employee learning, development and personal support. In the *governance* field, an organization's structure and decision-making policies have to be examined. It is about how and why an organization engages with its stakeholders. Instead of only focusing on the economic relationships of a business, the social layer also considers the *communities* of local suppliers and partners. The social layer looks upon how to create mutual benefits and help the communities with social issues. The field of *societal culture* is more general and focuses on society as a whole. Non-governmental organizations (NGOs) get a significant role here since they focus on social issues through their influence on businesses. The logic in this field is that a company will fail if society fails. Therefore, it is beneficial for sustainable companies to carefully study the culture of a society to be able to prosper in collaboration with it. *Scale of outreach* looks upon how deep the focus is and how broad the outreach of the relationships of a business reach. It can be geographically with regards to long-term integrative relationships. An *end-user* does not necessarily have to be the same as a customer. The end-user is instead the one that consumes the value proposition.

Therefore, it is vital that the needs of the end-user are met, primarily considering the quality of life.

Again, the bottom part of the social layer considers *social impacts* as well as *social benefits*. The former field is similar to the economic costs or the environmental impacts. It treats the potential social costs that an organization is contributing. To quantify these can be hard to do, also, it is not defined yet which social costs to consider. The latter, social benefits, are the positive social impact an organization creates through its business activities. These are, as above, hard to quantify because of a lack of definition of social benefits, and broad measures are used for it (Joyce and Paquin, 2016).

### 2.2.3 Sustainable Business Case

A business case is described in the literature as a formal document or process in business. It contains information about the costs and benefits of an investment, as well as a comparison to alternative solutions (Maes, Vangrembergen and Haes, 2014). Schaltegger and Burritt (2018) describe it as a rationale to justify decisions and activities of the management. Salzmann, Ionescu-Somers and Steger (2005) refer to a business case as a highly individual and unique operation in business that adapts according to the circumstances.

However, while researchers are aligning about the outlines of a business case, they complain about the lack of clear definitions in the literature. Around for approximately 20 years is the research on the creation of sustainable business cases as a driver for a company's economic growth. The idea is to strategically create economic value by addressing and working on environmental and social issues (Schaltegger et al., 2012). Therefore, they can be seen as a progression from a business case that does not consider sustainable implications.

However, literature examines several different types of SBC. While all link the creation of social and environmental value to an impact on the economic value of a company, whether positive or negative, they differ in the weighting of those characteristics.

The research on SBC varies though in the used definitions. On the one hand, authors argue that positive effects on the environment and society appear as a side product of the aim of economic value. Gray (2006, p. 797) describes this so-called sustainable capitalism as "the most ludicrous [...] dishonesty". A sustainable effort is here a product of a value maximization for shareholders (Schaltegger et al., 2019).

On the other hand, researchers proved such positive effects on the environment and society as the main driver for economic success and, therefore, also the source of this success (Schaltegger and Burritt, 2018). The literature refers to that as a "win-win-win" or the Triple-Bottom-Line (Elkington, 1994; Rogers and Hudson, 2011)

Resulting, and in opposition to the previous approach, value is created for multiple stakeholders instead of only the shareholder. These monetary benefits would not have appeared without considering the sustainable factors. Also, Schaltegger et al. (2012) argue for the strategic creation of multiple sustainable business cases. In the long run, that can become the main driver for a company's success in the market. However, maintaining the continuous appearance of sustainable business cases requires an adaption towards a sustainable BM (Schaltegger et al., 2012).

An overview is provided in Figure 3, where the authors summarize and label the research on different types of sustainable business cases. They divide them into: "Business case of sustainability", "Business case for sustainability", "Business cases for stakeholder management", "Stakeholder business cases for sustainability".



	Business case of sustainability	Business cases for sustainability	Business cases for stakeholder management	Stakeholder business cases for sustainability
Starting point/initial motivation	Profit making	Solution of environmental/social problems	Value creation for stakeholders	Value creation for stakeholders through solving sustainability problems
Role of sustainability	Opportunity for creating profits	Contribution to sustainable development as the aim of business cases for sustainability	Not considered explicitly	Sustainability as explicit aim and basis for creating value for stakeholders
Opportunities coming along with sustainability	Can be used (opportunistically)	Need to be created	Not explicitly mentioned	Need to be created
Understanding of business success	Business success as profits	Business success not restricted to financial value; sustainability performance as an additional part of business success	Business success not restricted to financial value; business success understood as creating value for stakeholders	Business success not restricted to financial value; business success understood as sustainability-based value creation for stakeholders
Beneficiaries of value creation	Not explicitly defined; positive sustainability effects created for everybody; financial indicators frequently used for measuring value creation imply that benefits are restricted to shareholders	Not explicitly defined; positive sustainability effects created for everybody; financial indicators frequently used for measuring value creation imply that benefits are restricted to shareholders	All stakeholders; however, the natural environment and humans with whom we will likely never engage (e.g., the children of today's children) not explicitly considered	All stakeholders; value creation from solving a sustainability problem is explicitly considered for all stakeholders as well as for the natural environment and humans with whom we will likely never engage (e.g., the children's children)
Understanding of trade-offs	Focus on identifying trade-offs and synergies	Focus on overcoming trade-offs to create synergies	Focus on overcoming trade-offs to create synergies	Focus on overcoming trade-offs to create synergies
Understanding of business performance and sustainability performance	Business and sustainability performance are understood as dichotomous concepts	Business and sustainability performance are understood as dichotomous concepts, which need to be aligned to create triple win solutions	Business performance is understood broadly as value creation for stakeholders; sustainability performance not explicitly addressed	Separation of business performance and sustainability performance is rejected; business performance needs to be analysed and created for each stakeholder and the natural environment

Figure 3. Different concepts of sustainable business cases from Schaltegger et al. (2019)

### **3. Methodology**

*In this chapter, the authors present how the research was conducted and highlight the potential drawbacks of the method used. The chapter explains the research strategy, design and method, as well as diving deeper into the interview selection and the process of iterations throughout the thesis. An extensive literature review has been made to be able to build theory for the thesis. The literature review's purpose is to be as unbiased as possible and to present what has been written before on the subject.*

#### **3.1 Research Strategy**

The authors have chosen to undertake an inductive approach, since it matches well with the exploratory nature of the thesis. An inductive approach provides for a less structured approach, i.e., for theories and concepts to emerge from the data (Bell, Bryman and Harley, 2019). It benefits the study by giving the authors the opportunity to have an open mind and open-ended view of the research process. To get the necessary information from interviewees, room for pivoting and iterating must exist if the data does not align with the research topic. The relative novelty of the research area, combined with the ambiguity of how to apply the knowledge to the case, also strengthens the reasons for this approach. Contrary to the deductive approach, the inductive approach is to develop theory after the study instead of base the study on theory and hypotheses (Bell et al., 2019).

The thesis has a qualitative research strategy since there is no analysis of numbers, rather words for answering the research questions (Bell et al., 2019). Indeed, some numbers have been analyzed, often in connection to the secondary data analysis, but the main research done is qualitative. To tackle the subject of SBMI in the context of the case, the authors need to interview the right persons rather than trying to collect data quantitatively. The interviews have enabled the authors to answer the research questions in a nuanced manner. It is this nuance combined with the possibility of acquiring additional information from the interviewee that is the primary goal.

#### **3.2 Research Design**

The thesis was not explicitly designed before data collection was conducted. The authors experienced no need to define the research design prior since there is no consensus with regards to the value it creates (Yin, 2010). The design is close to a case study design, described as studying “a single organization” (Bell et al., 2019, p. 63), since the focus is on SBMI for SMEs, with the help of the SBMC as an opportunity by studying a specific application case. The research design was later chosen because of the scope, the subject of research as well as the fact that only one company is studied. The authors have worked closely with the venture and have talked to the contact person extensively with regards to both primary data and minor general questions.

Figure 3 shows the route that the researchers have taken in conducting research for this thesis. Working from the prior knowledge about the mill and the company, the authors defined potential environmental or social problems and general research questions (1). This knowledge stemmed from the author's own research about the company by searching online, as well as reading previous research reports conducted on the mill's functions and applications. A bigger picture was painted through initial and continuous discussions with stakeholders from the case

company which will be further described later on (1a). During these discussions, notes were taken to collect prior data and to be able to read up on relevant literature (1b). At this point, the researchers decided to work from the concept of combining the model by Heikkilä et al. (2018) with the SBMC found in the article by Joyce and Paquin (2016). This was the first iteration loop of the thesis when different literature was read to find an angle of the thesis, emerging from the discussions mentioned above.

From the start, the angle of entering a developing country was decided because of the more significant potential and impact the mill can have there. Also, the case country was chosen because of the relative openness of the country and the entrepreneurial spirit and the network of the facilitator First to Know (FTK).

When the subject was set, the authors could start to find the relevant respondents (2). The authors started out by interviewing the Chairman of the board, Eric Lundgren, and had two more booked interviews, one with Chris Murray and one with Gabriel Ekman. It was through these interviews that the authors then used snowballing sampling (Yin, 2010), to be able to get connected to the best possible respondents. The requirements when asking for references was that the respondents should be knowledgeable within sustainability and BMI, with additional benefits when familiar with LibriXer or Rwanda.

The exercise of data collection contained both primary and secondary collection (3), which is described to a greater extent below. To get as reliable primary data as possible, the authors chose to interview both, external stakeholders (3a), as well as the team at LibriXer, customers, investors and affected government employees. To also nuance the data, external interviews (3b) were held with respondents closely related to the fields of sustainability, business in Rwanda and BMI. If some information was lacking, the authors provided a brief background of the mill to refresh the respondent's knowledge. A more detailed description of the interviews can be found below.

After the primary data collection, the authors used the transcription service Otter.ai to transcribe and highlight important information from the interviews. This exercise and its outcome led can be found in chapter 4, Empirical Findings.

Next, the authors interpreted and analyzed the data (4), not formally coding them but finding how strings from the data could fit into the proposed model.

The conceptual work for the augmented model (5) contains the second iteration loop for the authors. After reading more literature on the subject, as well as going back to notes from the prior data collection, the authors combined the model of generating a new business by Heikkilä et al. (2018), with the SBMC by (Joyce and Paquin, 2016) that adds the environmental and social layers to the existing economic layer. The last step of the process was concluding the research and writing the key findings and contribution (6).

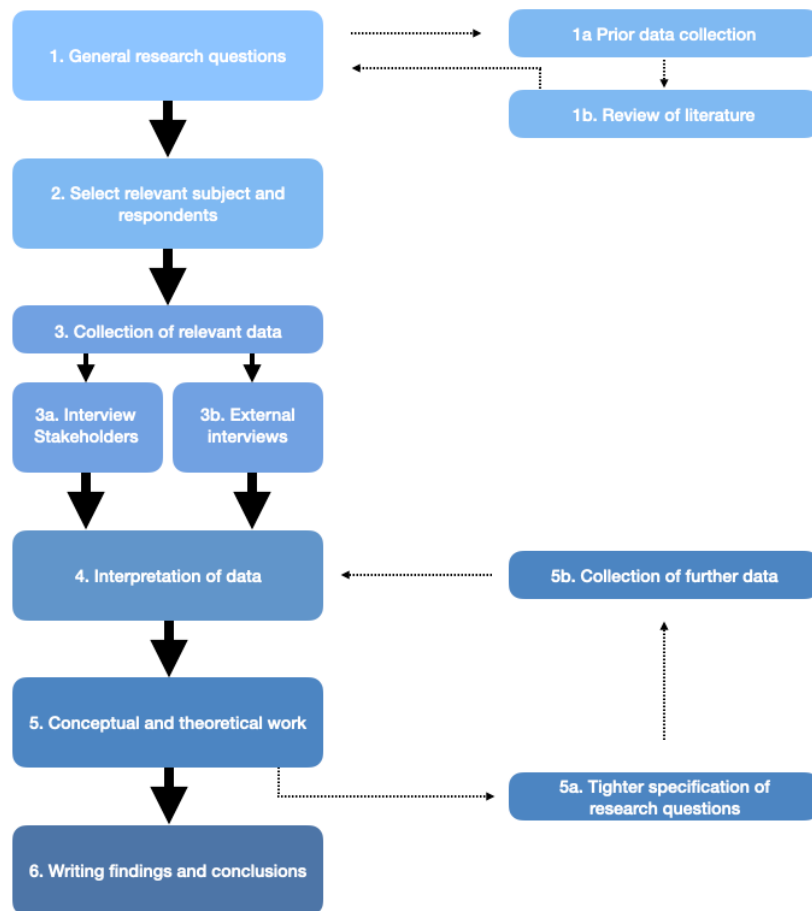


Figure 4. The main steps of qualitative research, adapted from Bell et al., (2019). Compiled by the authors.

### 3.3 The case selection

In order to collect relevant data, the authors decided to study the research topic in collaboration with a suitable company. The following selection requirements was focused on companies based in Sweden because Sweden offers various ventures with sustainability aspirations, which made the selection process very successful. There are several requirements that the authors have towards finding a potential case and eventually one company turned out to be the best match. The tested requirements relate first and foremost to factors within the company but also to the possibility for conducting stakeholder interviews. Libriker AB turned out to be a suitable candidate and the reasons for that are provided below. The sequence of the mentioned criteria does not reflect their importance and serves purely as a comprehensive presentation. The first requirement refers to the size of the company. As the thesis focuses on SMEs, there is a limit for maximum 250 employees or 50 million Euro in turnover, following the definition by the European Commission. That includes the following three types of companies:

- Micro: < 10 employees; < 2.000.000 € turnover
- Small: < 50 employees; < 10.000.000 € turnover
- Medium: < 250 employees; < 50.000.000 € turnover

(The European Commission, 2018)

Besides Members of the Board, the company's team consists of an employed CEO as well as an employee in the testing facility. In addition, the company has an agreement with an investor that enables them to employ external personnel when necessary. While LibriXer ranges on the lower end of the preferred case company, it is defined as a micro company. Furthermore, the company should be established founded not too recently. That ensures that the following requirements can be fulfilled and that there is an existing network in around the company. LibriXer was founded in 2019, but the technology is much older and has been utilized in previous ventures.

Next criterion was the ownership of an innovative product or technology. This research aims to collect data from ventures with a product that is underrated or has a high potential in the market. The authors did not apply a clear definition for this requirement, but excluded ventures with trivial products on the market. The airstream technology of LibriXer, which liberates materials through an airstream instead of grinding, is an innovation within industrial milling solutions and fulfills that requirement.

The third criterion for the venture is that it had outspoken sustainability aspirations. The authors defined that, based on the reviewed literature, as the ambition from the team to utilize the firm's capabilities to create economic, social and environmental value. This requirement is fulfilled by LibriXer according to the data from the preparatory interviewees. However, it is important to note that the company does not focus on social and environmental value creation but sees it rather as common sense to offer a sustainable product or service. Therefore, the authors see that this is a suitable precondition and a foundation for future development.

The final criterion is an undefined or fuzzy BM which hinders success of the company. A suitable company should have a perceived mismatch between the potential and the actual achievements. The potential is difficult to quantify, and the authors use qualitative data from the preparatory interviews to understand that mismatch. In the case of LibriXer this perceived gap is very obvious and interviewees clearly overestimated the company based on their potential. Also, the company confirmed that there is a very loosely applied BM and instead the BM is changed depending on the needs of every individual customer. Based on these matching requirements, the decision to use LibriXer AB as a case company was made. A more detailed description can be found in Chapter 4 Empirical Findings.

### **3.4 Research Method**

The research method chapter is divided up between the two major types of data that were sampled, namely primary and secondary data. A prior data collection was conducted before deciding which direction the thesis was going to pursue. It contained initial meetings with the case company and aimed to niche the topic for the thesis. Furthermore, the initial data was found during this process and shaped the following work. The primary data was collected with semi-structured interviews, and respondents were contacted through a snowballing approach. The secondary data was sampled from reports, websites and high-quality editorial media. For clarity and structure of the thesis, the authors combine the model of starting a new business from the article by Heikkilä et al. (2018) and adding the layers from the sustainable BM canvas from Joyce and Paquin (2016). By this logic, the authors want to test how to integrate sustainability in the core of the business. This is suggested by numerous articles, and Bocken et al. (2014) write that if sustainability is treated as an add-on rather than existing in the core, a business will only try to counter the unsustainable outcomes of business activities. Instead, it is favorable if the company is able to incorporate sustainability in all aspects of its business,

not to be viewed as greenwashing, but mainly to contribute to a better environment and social standards. The basis for that combination is the vertical and horizontal coherence of the Triple-Layered BMC (Joyce and Paquin, 2016). It describes the influence of information from each field into different fields on the same canvas or the matching field on another layer. That logic allows for the utilization of the Triple-Layered BMC with the economic innovation path for new business development.

### 3.4.1 Primary Data Collection

The primary data used in the study is from the interviews that have been held with the respondents. This data was collected to provide a richer data set and to answer the research question. For example, some data were collected to provide a more substantial background to the company, its BM and how their view on sustainability is. Other data was collected for better understanding BMs, BMI and sustainability. Also, data collection regarding conducting business in Rwanda, as well as how to attract stakeholders, partners and investors were made.

To get a deeper understanding of the company, the mill and to come up with potential research areas, a number of informal prior data collection meetings were held. Several of the meetings were held in collaboration with FTK, Libriker and other researchers to examine different views on the issues of the company and application areas of the mill. Also, pre-interviews were held with Eric Lundgren at Libriker, Per Östling and Ola Ekman at FTK for deeper understanding about the mill. A pre-interview was also held with associate professor Rick Middel at the University of Gothenburg. Rick Middel is employed at the Unit for Innovation and Entrepreneurship and has a particular interest in SBMs. This interview led to the use of the model from Heikillä (2018), from a lecture given by Rick Middel called “Why do sustainable business models fail?”. During the prior data collection, notes were taken to be able to revisit the data and apply it later on in the thesis.

The interviews were of semi-structured nature, which means that they were based on an interview guide, but open for spontaneous discussions and further questions (Bell et al., 2019). That enables the authors to collect comparable information as well as additional insights about the topic. An interview guide (see appendix) was used that allowed the authors to ask the right questions and so that the conversation always stays on track. The interviews were recorded and, as soon afterward as possible, they were transcribed to have the input fresh in mind. The transcription process was simplified by the usage of the software Otter.ai, which automatically records and transcribes the interviews. To make sure that the transcription was not distorted the authors also listened to the recordings and edited where the software failed. Primary data is subject to biases such as interviewer bias, recall bias or response bias.

Direct			Indirect		
Interviewee	Title and Why	Duration	Interviewee	Title and Why	Duration
Eric Lundgren	Chairman of the Board at Libriker. Information about background, current affairs and BM.	46 min	Per Östling	Collaboration Facilitator at The Space by First to Know. Previous knowledge about the mill. Has worked all his life with social and environmental issues.	56 min
Christian Murray	CEO at Rescaype UK. Partner/Customer of the mill. Works with sustainability and the mill.	51 min	Per Lanevik	CEO Canblinot. Previous knowledge about the mill. Serial entrepreneur and knowledge about many aspects of the BM.	44 min
Gabriel Ekman	CEO at BAG Innovation in Kigali. General business in Rwanda, with a focus on social issues.	28 min	Abir Hossain	Business Consultant within sustainable business development. Familiar with Libriker through a venture called Juteborg.	48 min
Pascal Murasira	Managing Director for East Africa at Norrsken Foundation in Kigali. How to work with NGOs, investors and local partners.	39 min			

Figure 5.. Presentation of interviewees and the reason for choosing the respondents.

### 3.4.2 Secondary Data Collection

The secondary data collection mainly includes information from the Rwandan Ministry of Health and Rwandan Development Board. The first secondary data collected was a PowerPoint presentation from the Rwanda Development Board, given by the Rwandan Embassy of the Nordics. This presentation helped the authors with a better understanding of the country and its potential as a hub in East Africa. Additionally, two reports on health care waste treatment were sent to the authors from the embassy, written by the Rwandan Ministry of Health. These reports were asked for when the authors had identified the potential case of pharmaceutical waste in Rwanda and helped with confirming the case, as well as finding relevant information. High-quality journalist articles have been used for specific information with regards to Rwanda, pharmaceutical waste and sustainability reports. Lastly, secondary data was collected from the Libriker website and from a report written on the Libriker mill in 2012, where different applications and materials were tested.

The data aided the authors in contextualizing the answers from the interviewees as well as having a critical and objective discussion. The data helped to develop a richer knowledge with regards to the case and the case country. Moreover, getting a better view of Libriker was crucial since working so closely with a company can produce a distorted picture of the company, the BM and the mill.

### 3.5 Quality of Research: Reliability, validity and replicability

Typically, the three main criteria defining the quality of business research are reliability, validity and replicability (Bell et al., 2019). In this study, the most important is instead the external validity or generalizability, as well as reliability. In a book by Silverman (2013), about conducting qualitative research, replicability is not even discussed, guiding the reader towards the unimportance of it. Therefore, the authors are not as concerned with replicability in this study since the data could differ depending on the respondents and that Libriker, as a company,

will probably develop, meaning it might not be possible to conduct the exact same study in a couple of years. Had a study been conducted with the same respondents, around the same time as this study, the replicability would be high. The crucial component is that the methodology chapter thoroughly describes the research design and the data collection process of the study.

“Validity in qualitative research means ‘appropriateness’ of the tools processes and data” (Leung, 2015, p. 325). There are numerous ways of sub-categorize validity, but to determine the quality of this thesis, the authors focus on external validity and internal validity. External validity is, as mentioned above, generalizability or transferability. Logically, it describes how general the results of a study are, i.e., how well it can be applied outside the specific research (Bell et al., 2019). In this study, the external validity can be seen as both high because conducting the same research on a similar company should produce the same results. The aim is to generalize the results for SMEs with an innovative product or service that wants to use sustainability as an opportunity. Also, the authors hope that the results can be a guideline for Swedish start-ups to enter Rwanda, with more of a purpose than solely an economic one. Internal validity, on the other hand, is focusing on the observations in a study and how they connect to the developed theoretical ideas (Bell et al., 2019). This quality criterion can work in some types of qualitative research, but since this research is exploratory in nature to be able to answer the research questions, internal validity is low.

Reliability refers in a way to the replicability of a study, but more precisely, it is about how reliable the data of a study is, which in turn creates how replicable it is. In this thesis, the degree of reliability should be considered high since following the steps made should produce similar results. The authors work for the highest possible reliability by being transparent and meticulous in describing the research process. Another measure connected to reliability that can work as an alternative way of evaluating the quality of research is trustworthiness (Bell et al., 2019). Within this term, there are four criteria, but the one connected to reliability is dependability. Dependability describes auditing of the thesis, meaning that complete records are kept concerning the research, such as transcripts, recordings or notes, (Bell et al., 2019). Auditing the research could then be done by peers during the course of the process. The authors have saved all possible documents to keep the level of trustworthiness as high as possible.

### 3.5.1 Improving research quality

Qualitative research is subject to critique in some respects, mainly brought forward by quantitative researchers, and there are four major issues with this type of research (Bell et al., 2019). The research was conducted with an awareness of these critiques and the issues were mitigated to the highest degree possible. The first problem addressed is that qualitative research is often subjective, meaning the authors’ biases are present in the research. Every author has different experiences entering research. In this thesis, the authors are aware of the biases concerning the case company. There have been several pre-study meetings in which information about the mill, its potential applications or prior collaborations was presented. In these meetings, it is possible that the authors could have gotten a distorted picture about what the mill actually is and how it will perform on different materials. To mitigate this, the authors have to the greatest extent, interviewed people with a previous knowledge about the mill.

Another common critique is about the replicability of a qualitative study, which is further developed below with regards to this thesis. The authors of a qualitative study are the primary tool of data collection, meaning that the data collected by the researcher is then filtered through the researcher and his or her preferences (Bell et al., 2019). Replicability can be hard to prove,



and the results of this thesis would most probably vary if different people were interviewed. Should precisely the same people be interviewed, and the same theories are used, it would still be hard to guarantee full replicability based on the researcher bias.

Furthermore, qualitative research can also be hard to generalize. It is about the possibility to generalize findings in, for example, one studied company. Bell et al. (2019) ask if findings of software engineers in one company in the USA can be representative of all software engineers. It is almost impossible to say, and this is definitely a weakness with qualitative research. Regarding this research, the point is not to be able to generalize the path for LibriXer and apply it to any company. The purpose of generalizing, in this case, is to create a concept of how to innovate a BM with the help of the sustainable BM. It will be different for almost every company, depending on what value the company brings to its customers. For example, LibriXer owns a product technology that can be applied in a number of fields. Their path would be different from a company owning a technology for renewable energy but similar enough to follow the same steps. The generalizability problem in this thesis is mitigated by developing the proposed concept.

The last common critique is attributed to the transparency issue, meaning that it is actually very hard to constitute what the researchers did and in what way they came up with conclusions (Bell et al., 2019). With this issue present, the authors have, to the best of their capabilities, explained the research strategy, interview method, pre-studies and interview selection to provide the most transparent picture of the thesis. That makes the thesis comprehensive to the reader and provides access to all applied sources.

### **3.6 Data Analysis**

To analyze the collected data from the interviews, the authors conduct a thematic analysis. The codes were combined into categories and lastly into themes. For coding, the computer-assisted qualitative data analysis software NVivo 12 was used. This was done to be able to visualize the codes, categories and identify the themes (Bell et al., 2019). A critique of such software is that it cannot help with the analysis of the data, although it is a powerful visual tool to use and has undoubtedly helped analyzing the qualitative data. Another tool used in the coding process was an extra resource found in the transcription program Otter.ai that picked out 15-20 keywords for each interview. This helped the authors in the beginning to get an overview of relevant themes.

To find the relevant categories and themes, the authors carefully went through the transcripts of the collected data multiple times. This process was conducted simultaneously as collecting more data, as a product of the inductive approach. During this process, the authors took separate notes on each interview and only afterward compared the codes, not to influence each other.

The most obvious critique of coding is that when a part of a text from a transcript is presented, it is taken out of its context, and its social setting is lost (Bell et al., 2019). This goes hand in hand with another common critique regarding the fragmentation of the data, which is that the narrative flow of what respondents say is lost. It can seem like a fragment from the data that is presented in the empirical findings does not mean that much on its own. To mitigate this, the authors have not deliberately taken quotes from interviewees out of their context. Also, to provide additional context, no quote presented in the thesis exists without an explanation discussing its content and meaning.

### **3.7 Limitations**

Regarding the interviews, the primary data would have been richer including two more types of stakeholders, who failed to attend booked interviews. These are officials from either the Rwandan government or embassy in Stockholm, and a sustainability investor for critical perspectives on being funded. Also, interviewing the CEO of LibriXer would have provided a deeper understanding of the company. With this information, the authors want to be transparent with the issues, and conclude that these interviews would have made the data set even richer. Nevertheless, the data acquired through the conducted interviews outweighs the canceled interviews by far.

#### **3.7.1 COVID-19**

The ongoing Covid-19 pandemic restricted personal contacts during the research for this thesis in the spring of 2021. Visits in Rwanda, at production plants and personal meetings were affected. Surprising problems, with connections to the pandemic, presented themselves when scheduling interviews. Interviews that were booked and confirmed were canceled in the last moments, perhaps a by-product of the easiness to meet digitally.

To maintain the highest quality possible, digital solutions such as Zoom and Microsoft Teams replaced face-to-face interviews, while also adhering to recommendations set by the Swedish authorities. Such solutions provided suitable replacement for face-to-face interviews, although the quality arguably dilutes without personal interaction, body language and impressions.

### **3.8 Ethical considerations**

In qualitative research it is imperative to treat the potential ethical issues that could occur throughout the research. Since the approach of finding the right respondents were of a snowballing technique, it was made sure that the interviewees should not feel obliged to participate, because of the reference given by previous respondents. The first contact, mainly through e-mail, provided the background and purpose of the investigation. Also, before every interview, all respondents were asked if recording and transcribing the interview was fine, as well as if their name, company and position could be revealed in the thesis. Every respondent was told that the interview was conducted to collect data for this thesis and that anonymity was an option. With these precautions, the authors have tried to mitigate the potential harm that could cause the respondents of a qualitative study. Lastly, the area of research revolves around BMI and sustainability, meaning that the general information gathered treats how to create a better world and is not harmful for the respondents.

## 4. Empirical Findings

*The chapter about empirical findings aims to present the case as well as the collected primary data from the interviews. Those were conducted based on prior findings and aimed to represent the business model innovation process with regards to sustainability. Both quotations, as well as free text, shall represent the findings as precisely as possible. The findings are presented in order following the process of BMI in a start-up and regard the three layers about economic, social and environmental features.*

### 4.1 Description of the case

Based on prior assessment the authors decided toward a unique venture and its case as a case for this thesis. Both, company and case country have started the groundwork that acts as a basis for SBMI, however are not too far into their process to deny innovation. LibriXer AB, founded in 2019, offers separation and comminution solutions for business customers within four major fields: Food, mining, industry and recycling. The Gothenburg-based company provides instant material separation through a new ground-breaking process. In a standard mill, solid goods get crushed into smaller pieces by applying pressure between surfaces to overcome the material's bonding forces (Gupta, 2016). However, LibriXer uses a technology where an airstream separates the particles in their natural, molecule-level bonds. The benefits from the less applied force are that less friction means lower temperature and a finer grinding size compared to established processes. The product is not a mill, rather a separator or a liberator, but for the sake of simplicity it is called a mill further on in the thesis.

With a focus on sustainable conscious customers, the company calls its offer: *“Rethink. Recycle. Refine”* (LibriXer, 2020). LibriXer has no defined BM but will then custom-build the machinery according to the customer's wishes. This openness provides LibriXer with an opportunity to custom-build the solution and have a constant cash flow of reoccurring payments.

The research on pharmaceutical waste is ambiguous since effects can only be discovered a long time after disposal. When medicine enters the groundwater, it takes several months or years until a compiled amount can be found in human bodies. Pharmaceutical waste can enter the ecosystem at various times such as during production, distribution and consumption. Pollution from the production of medicine is a particular problem for pharmaceutical waste (Nawrat, 2018). Another source of medicine in the groundwater is human consumption, which by natural causes releases chemicals into the ecosystem. Besides minimizing the intake, it is hard to mitigate since medicine is supposed to be used by humans. Human misuse is especially dangerous with regards to antibiotics when it comes to multi-resistant bacteria. Besides improved education about pharmaceuticals, it is primarily the collection and professional disposal of medicine that prevents it from entering the groundwater.

During pre-studies, the authors reached out to a leading Swedish researcher at the University of Gothenburg. He responded that unused medicine is not an environmental problem in Sweden because “more than 99% of the waste is incinerated”. However, the expert also stressed the need for solutions in countries where there is no professional disposal for pharmaceuticals in place.

Therefore, the milling solution offered by LibriXer poses a solution for this threat in developing countries that lack such infrastructures. Furthermore, it has the capability to not just safely dispose of the medicine but also to recycle valuable material such as aluminum from the packaging. The costly process of incineration could be focused on the pills exclusively. A figure on how Rwanda wants to take care of pharmaceutical waste can be found in the appendix.

That the packaging should be removed before incineration is stated in a report by the Rwanda Ministry Of Health (2016). According to another report by the Rwanda Ministry Of Health (2017), the amount of pharmaceutical waste only generated from 35 hospitals is 38.5 tones per year. In this number, the waste generated by the inhabitants from medicine bought at the pharmacies is not included.

Rwanda has around 12 million inhabitants with an average age of 20 years. In comparison, Sweden with an average of 41 years. The country benefits from recent political and economic stability since its genocide in 1994. The stability has led to a GDP growth rate of around 8% p.a. for the last ten years (Rwanda Development Board, 2016). That exceeds its neighboring countries. Goals are set high, aspiring to reach the status of a middle-income country in 2035 as well as reaching a high-income country status in 2050. Together with the detailed layout of sustainable development goals (SDGs), these aims make Rwanda a key country in the future of Africa (The World Bank, 2021). Rwanda presents itself as a door into the big east African market and receives attention from various international corporations. According to the World Bank, it is the third easiest place to do business in Africa and the fourth easiest to get a credit worldwide (Rwanda Development Board, 2016). The country is described in a report as following the state-led model of the Asian-Tiger economies from the second half of the 1900s (The Global Impact Investing Network, 2015).

Rwanda is a developing country, but due to the relative easiness to conduct business in the country, many impact investors and NGOs have their eyes on the country. Another aspect is that the market is quite limited because of the small population and area, making Rwanda a launching point for entrepreneurs and investors of the region (The Global Impact Investing Network, 2015). Confirmed through the pre-interviews, in the western world, corporations working with sustainability often focus on the environmental aspects of sustainability. This is not the case in Rwanda, where social sustainability is more important, even though a competitive advantage through environmental sustainability is not unfavorable. Many investors and NGOs in the country have this social focus, but they also follow trends, which often have some kind of background in the environment.

Due to the political instabilities and absence of investments in the 20<sup>th</sup> century, the country's infrastructure does not meet international standards. This is reflected in the poorly maintained road system, the absence of a train system, and exorbitant costs for electricity that are 3 to 4 times higher than in the neighboring countries (Nations Encyclopedia, 2021). Also, the country's waste management is outdated, and the surroundings of landfills suffer from the absence of technology, skilled workers and the amount of waste that exceeds the locations. Groundwater pollution is one of the primary long-term problems and will haunt directly and indirectly affected areas for years (United Nations Development Programme, 2013).

As shown below, there is a clear concept about the handling of medical waste in Rwanda. However, the absence of past investments as well as poor handling and equipment raises doubt to what degree this process is actually applied.

## 4.2 Purpose of the Start-up model

The decision of the most viable BMI process was made based prior to the findings from the conducted interviews. The model aims to guide the interviews and structure the data collection. From the literature review and prior talks with experts, it became apparent that the right way to set up a SBM is to start from scratch without limitations from the existing business. While the three other paths would also innovate a BM, it is the Start-up approach that is able to include environmental and social aspects from scratch and not as a later addition. An overview is provided in Figure. The collected data confirms this chosen path as the most appropriate one to establish a SBM. The comment by Pascal Murasira represents the general opinion of the interviewees and agrees with the chosen approach from the authors.

*“It should be the DNA of the company [...]. Like if you run it as your business model, not just like something you think about because it is nice to have.”*

- Pascal Murasira, Norrsken Kigali

The findings strongly suggest the Start-up path, and respondents claim that true sustainability can only happen entirely with the total focus of a company. According to the respondents, sustainability should happen from the inside of a company and not as a result from pressure. Applied from the inside is the only way that environmental and social factors actually change the proposition of a company. Implementations, therefore, have to be done very deep into the BM and cannot happen as another layer on top of an existing solution. This ensures that the company does apply corporate sustainability and does not only add layers of responsibility. With regards to LibriXer, the decision towards a Start-up process seems unnatural since it is an existing and operating venture. However, while the company is up and running, there is no existing and defined BM in place. With individual propositions the venture aims to attract different customers but lacks clarity and definition. The absence of success to date can be an indication for the need of a BM. Therefore, the Start-up path is applicable since no existing BM is replaced.

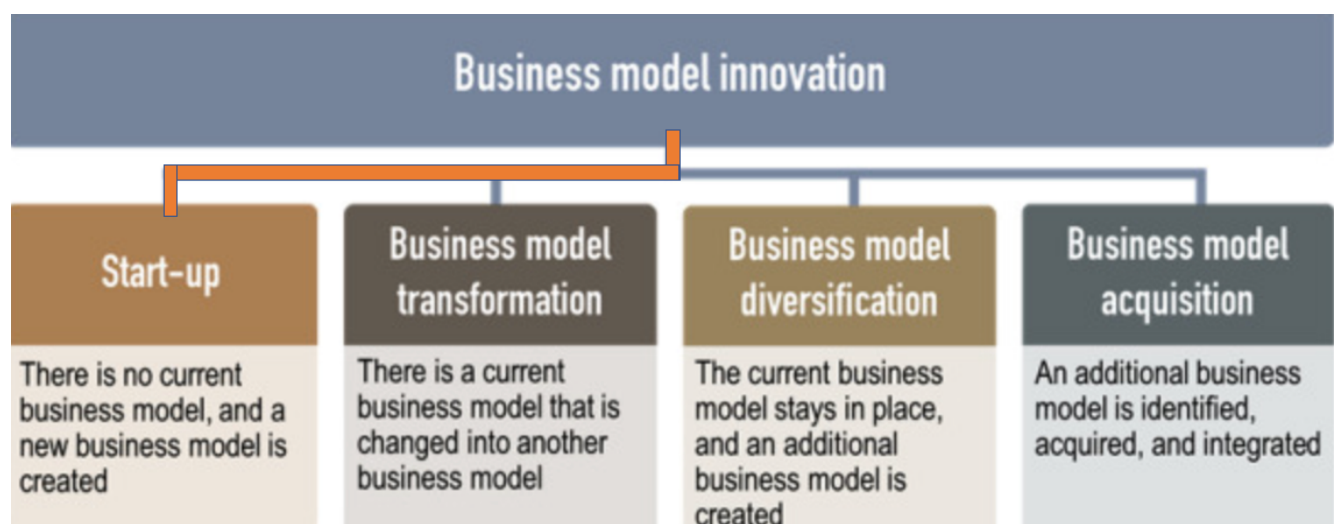


Figure 6. Business Model Innovation based on Nosratabadi et al., (2019). In orange, the relevant path in this thesis.

### 4.3 Purpose of the applied model for sustainable business model innovation

To meet the idea of a Start-up model that includes attributes for sustainability from scratch, the authors decided to follow a model for BMI by Heikillä et al., (2018). The aim of this is to present the data in the most transparent and comprehensible manner. The collected primary data is then presented along this proposed process. As a result of decision for the Start-up path, the decision was made prior to the interviews in order to guide the data collection. The findings are then implemented into the model. That allows the authors to structure the data and use the relevant information for an iteration of the initial process. While this original model focuses on the economic BMC, the authors added the social and environmental layers. The vertical coherence in between these three layers allows the authors to combine them with the presented model below.

### 4.4 Analyze the market

Interactions with the network are one of the key elements in finding new business opportunities, according to the interviewees. The respondents reveal that their connections eventually brought them where they are today. As Eric Lundgren mentions, most of the current opportunities are a result of his relationships. They have accumulated over the years and eventually resulted in successful business cases. He furthermore describes this as a great chance, especially for small ventures due to the lack of resources. Small, young companies are tight in financial resources as well as in employees. Therefore, the applied activities need to be as efficient as possible. It also means that, unfortunately, not all necessary activities can be covered at all times. Compared to proactive sales engagements, opportunities through his network save time and effort. However, there are also disadvantages that close interaction with a network can cause. The respondents mention attributes such as a limited outreach to new customers for the business compared to a more active sales effort.

*“I would say probably mostly is coming from network where someone comes, by some strange reason sometimes it’s very strange. But to give you an example of that, in the early 2000s, a professor from UCLA called me and he had a plastic molecule a polymer. [...] And that’s a very typical situation of something that is initiated, where I had absolutely no idea about the material. And that’s the material that we now over the weekend, say 15 years later, did mill three tons. “*

– Eric Lundgren, Chmn. LibriXer

Relationships as the underlying reason for successful entrepreneurship is also mentioned by Christian Murray. He also agrees upon the importance of a long-term mindset. Through prior entrepreneurial activities, a network was built that eventually resulted in the exploration of opportunities together with Eric Lundgren and LibriXer. Especially worth noting here is the respondent’s background that is characterized by corporate activities yet with an entrepreneurial mindset. Even without his own entrepreneurial experiences, Christian Murray already built a network that contributes now to his own ventures. That long-term effect shows the need for relations even if there is no initial success.

*“And then from that we tried to break it up, as in prior entrepreneurial efforts, you build the relationships, and then you play it out or you go and being a long-term entrepreneur, I was quite aware of the long-term investment that was actually going to be needed. “*

– Christian Murray, CEO Rescaype

Several interviewees highlight the importance of networks in order to explore the market and find opportunities. However, interviewees also mention that it is not the network alone that creates opportunities but also an alert mindset. When asked for the source of his co-founded venture in Sweden, Sunfleet (the first carsharing concept in Europe at the time), respondent Per Lanevik underlines the importance of articles and news. Such broadly available and cheap information adds a perspective and broadens the understanding about the market the company is about to enter, or also why it should not enter. The respondent also mentions “to be out”, which refers to the need for an entrepreneur to dive into the market. An essential part that, despite all information from a network or own desk research, it is the own experience that provides the most accurate and unbiased information.

*“And that network, or to be out there to listen to what’s going on. Who is talking to who, articles, research, news, everything is a big area for new ideas? So, therefore, you have to be out at that time. “*

– Per Lanevik, Adviser

With regards to sustainability, Per Lanevik mentions the resolution of (social and environmental) problems as a chance for LibriXer to stand out. The exploration of markets for problems within specific industries or areas as well as the search for overarching problems are a chance to get noticed. That also refers to the broad application opportunities for the mill. A mill that is established in the Rwandan market can prove the concept and then be the basis for scaling the project into different markets. The attitude of being a problem solver in the first place becomes a commonly shared phrase during the conducted interviews. It shows the need for companies to work on existing problems. That also does not seem to be a trend but rather an established opportunity to find new business opportunities.

*“But otherwise, I feel that they should be more into a problem solver to find where the problems are. If it’s a problem with a certain sector, wherever it is, or a problem in a certain country or area or region [...] be a real problem solver [...]. “*

– Per Lanevik, Adviser

A holistic approach is presented by Pascal Murasira as he mentions the importance of collaborations for new businesses. With this said, he refers to the advantage of European new ventures compared to the current situation in Africa. The interaction with educational institutions, incumbents and governments is more mature in Europe and provides considerable advantages for new ventures when it comes to the exploration of new markets. The cooperation with such established institutions provides knowledge about the end-user as it would be challenging to understand otherwise.

*“Businesses are born everywhere. [...] But the tough part is building sustainable businesses from ideas. The main difference I find here is that there is more collaboration between business, among businesses, like the ones that are starting to get developed, and the large businesses, corporations, and governments and, and other learning institutions like universities, so that triangle, business, education, and government. “*

– Pascal Murasira, Norrsken Kigali

Discussing the possibilities for start-ups to find customers, Pascal Murasira mentions Norrsken’s own efforts in Kigali, Rwanda. The effect through collaboration with new ventures and incumbents creates an eased market entrance for the start-ups as well as a knowledge transfer to the established firms. The respondent sees that as a key feature that is currently

missing in the local market. The potential is to create lasting effects for the local company landscape and better integration between small and big companies.

*“So, one of the areas we wanted to work on as Norrsken is to make sure that there is more collaboration, especially between young start-ups and large businesses. “*

– Pascal Murasira, Norrsken Kigali

In summary, this section provides an overview of the respondents’ view on market analysis. According to the interviewees, the existing network is the main driver to find new opportunities. It is the conclusion of many years of networking that brought the respondents together with their current clients. With a focus on sustainability, the search for unsolved social and environmental problems can drive entrepreneurship and creates new opportunities. However, besides the network, the respondents mention alertness as well as the connection amongst established institutions as essential factors for successful market exploration.

## **4.5 Test and iterate the Business Model I**

This section describes the two initial steps within the BMI process. It includes the analysis of a preferred customer to the development of a viable proposition. Furthermore, that section has a high degree of early-stage iteration. The aim is to gather an initial understanding of the environment of a business as well as to test the intended value proposition.

### **4.5.1 Know my customers**

The importance of mutual appreciation with the customer is highlighted by Eric Lundgren. Besides the offer of great technology, it is the sympathy that keeps companies together with their customers. That presupposes a customer who appreciates similar values and works in a similar manner. That opinion builds the bridge from the previous importance of a network for new business development. The respondent mentions the likelihood to do business with people that have a similar mindset.

*“But the reality is people do business with people they like, then it doesn’t hurt if you have a good technology that makes sense that you can quickly explain in terms that anyone can understand it. And then you can apply those technologies to the situation where your counterpart is looking from his point of view. [...] the network is absolutely super important. I think also we are doing business with people we like and enjoy. “*

– Eric Lundgren, Chmn. LibriXer

The urge for communication between the company and its customers is described by Christian Murray. The possibility to directly interact with customers mitigates the risk of getting misunderstood in long communication channels. Novel products have the need to be addressed directly to the right person. It also creates the opportunity for getting a clearer picture of the customer than it would be possible through a middleman. In addition, Christian Murray mentions his product as a chance for his customers and the government to hold discussions.

*“Now, we’re looking directly to farmers and government. And we’re looking to build that connected relationship with them, using m-Pam as the catalyst for them to talk to each other. And then we’re going to supply the software for them to talk to each other in a new way. “*

– Christian Murray, CEO Rescaype UK



The chairman of the board at Libriker, Eric Lundgren, means that the motivation for his company oftentimes sparks from direct customer interaction. Building opportunities together with the clients who approached him is in that view superior to a focus on mass production that is loosely connected to direct interaction. Also, enjoyment cannot be forgotten as a driver for small ventures. Direct interaction with customers is a conscious decision made by the company. It is a result of the preferences and happens on purpose rather than unplanned.

*“Because you lose contact with the world, if that makes sense. You don’t do what you think is fun. So, for me, I’m excited building it myself, but our company built one machine, and to get it out there, the relationship with a client [...].”*

– Eric Lundgren, Chmn. Libriker

The need for an involvement of the broader society is highlighted by Per Östling. In addition to the customer perspective, he argues that persons who feel left out can develop resistance to the business. Such adverse developments can result in serious threats and should be avoided from the beginning. Introducing a long-term perspective is necessary to create lasting changes in society. That society represents the end user since they benefit from a decreased number of pharmaceuticals in the groundwater. The comment represents the interviewees opinion for the need for early and direct involvement. That ensures to gain an understanding of the situation and builds the basis for a long-term solution. Since such benefits appear after a long time, they require a special treatment that does not require short-term effects.

*“[...] that’s the only way to change the society. Because people that are not involved from the beginning, they tend to be against quite soon.”*

– Per Östling, Adviser

Pascal Murasira explains that a company would have to have a broader focus than only focusing on the customer. It is rather that a single customer is more than that single person, instead there are a number of persons around who are affected by the actions of a company. In addition, the surroundings of a customer can become important partners in the long term and should therefore not be excluded. He realizes that even though not a customer today, it is possible that the person can be a customer tomorrow.

*“I definitely think it is important [...] not only consider the person you’re selling to today as your customer. [...] It’s not only that the customer, the consumer that you’re affecting, but also everybody around them. [...] And you may not be selling to a particular group today, but who knows tomorrow that you may want to sell to them. They may not be purchasing it today, but maybe tomorrow we’ll develop a product that they would want.”*

– Pascal Murasira, Norrsken Kigali

The advantages of a positively influenced end-user by the company are highlighted by Pascal Murasira. The impact of a community is critical to the success of a business. That is especially valid in the Rwandan market, where social ties within communities are strict. The creation of a win-win relation is anchored in the local surroundings.

*“So, whether you’re talking about the people that are taking money or wanted to pay you, but also everybody around you, so all the, for some reason, they are all interconnected with your business, and they are critical to your success as a business. So, you cannot let your wastewater from your factory running in the community, you also do not want to have as a business, you want to have the social capital around the factory. So, like people around you also, like,*

*actually proud to have you in their community, they will be protecting you like if you are in trouble [...]. “*

– Pascal Murasira, Norrsken Kigali

Other than the protection by the local communities, Per Lanevik mentions the competitive advantage that a network provides. When competitors arise, respectively, are present at the time already, the affected end-users have to potential to make the difference. It is vital that all involved sides feel the created value that they get out of the collaboration. Pascal Murasira also takes the step that an investment into the affected, direct and indirect, communities pay off in the long run. Actively supporting the surroundings cannot be seen as a move from the company. It is much rather a necessity today that cannot be unseen by companies anymore.

*“Like, it is powerful to have these communities with you, it makes sense to invest in them, not just because it’s nice to do. But it’s because it’s a must in this era. “*

– Pascal Murasira, Norrsken Kigali

Another very long-term perspective from Pascal Murasira deals with the creation of jobs for future employees and to lift up the area. He stresses the importance of a balance between social and economic sustainability. Both influence each other and play a key role in an increased living standard in an area.

*“Yeah, they become your customers. Are they able to afford it to send their children to school? Those children maybe will get jobs elsewhere and become your customers. Or will they become investors in your business? Or will they come work for you? But it does, like we’re just talking about what sustainability and long term, it does make sense to have these people as your friend. It’s just simple common sense. “*

– Pascal Murasira, Norrsken Kigali

To summarize this section, a precise definition of the customer has a significant impact on the success of a company. Small ventures can benefit from doing business with like-minded people where there is a mutual agreement on certain values. Similarities act as an accelerator to the process, especially with limited resources. However, the respondents argue for a broader view on customers that implies the end-user as well as surrounding communities, especially in Rwanda, where there is a strong tie within social groups. The interviewees agree that there needs to be a win-win or value creation for everyone involved in order to establish a successful venture.

#### 4.5.2 Develop viable proposition and BM

The interviewee argues for the need for an implementation of a sustainable behavior. The value proposition, therefore, has to include benefits for all three layers of the BM so a venture can apply the features and create value. The respondent argues that there is an imbalance between the talk around sustainability and the situations where it is actually applied. That opinion represents a number of the collected answers. The interviewees agree that companies talk too much about sustainable behavior while they rarely apply real changes. Talking about a proposition, the respondents argue that the attributes that lead towards an offering have to be sustainable.

*“The most important thing in that definition is not only to define what is sustainability but at the same time, the definition plus the action that should be combined. “*

- Abir Hossain, PM Juteborg

According to the interviewee, the solution provides unique benefits to the customer that the competition cannot meet. It is therefore claimed to be unique. The value proposition differs between the LibriXer mill and more traditional mills. However, the interviewee also responds to the need for a social and environmental value that is included in the offer of the company from the beginning. Applying the scope from a different perspective should therefore be common sense for such a venture.

*“We try to bring something to the market that is unique. And by that it follows that the sustainability or the smartness in the process becomes a natural outcome of the whole relationship. [...] And that’s a very, how shall I say, traditional Swedish Northern Europe approach to business where we very quickly looking at a case from many, many angles.”*

– Eric Lundgren, Chmn. LibriXer

A majority of new ventures in Rwanda offer value propositions that deal with solving issues of the community. According to Gabriel Ekman, the local environment seeks and supports such ventures more than any other ventures. It is also an attribute that is within society from birth onwards. The bond between the individual and the society is strong, and the creation of social value is deep within the mindset.

*“So, all the innovations that you’ll find will always be around solving a community need or a community issue, which makes the innovation look completely different. So, it’s not these constant new innovations, but more innovating kind of a social need.”*

– Gabriel Ekman, Founder BAG

The respondent mentions the need for a clear value proposition in order to gain new customers. From the beginning, a venture should communicate what they are able to do and also what they are not able to do. The goal should be a relationship that benefits both sides and therefore requires an open discussion about mutual capabilities. The respondent also mentions openness about the way of conducting business once a preferred customer is found.

*“Why me? Why do you come to me? And if I don’t find an absolute, short answer to that, I probably got to tell the customer to go elsewhere. [...] then in the relationship with them we have to be very open-minded with the business model. And, we have to be able to offer a sale of equipment or a service finance funded or however that is organized with proper warranties and proper service agreements. And as well as partnership where we together jointly develop something based on a new technology.”*

– Eric Lundgren, Chmn. LibriXer

The respondent mentions the role of innovation and excitement in order to attract new customers. Christian Murray and also Eric Lundgren relate to the capabilities of a new product when it comes to new business. That statement represents a broader opinion where respondents argue for the newness of the product as a driver for success. Also, in a critical way since the initial excitement about the possibilities distracts from more serious thoughts about finding business cases. When asked about motivational drivers for such a value proposition, the respondent argues for multiple layers of rewards. A considerable amount of personal motivation comes from the pride of conducting relevant business. Therefore, the economic

success is only a fraction of the motivation that drives the team. Eric Lundgren argues that a company always has to rethink and improve the own value proposition, a statement that highlights the need for different iteration processes. Especially in regard to local solutions, the offer has to be precise to the actual need.

*“But it cannot be the only (economic) reward. [...] in my world, there has to be more than just pure profit. They have to be proud of what you’re doing. I mean, otherwise, we should manufacture weapons or drugs [...].”*

– Eric Lundgren, Chmn. LibriXer

To summarize the development of a viable proposition, the creation of a win-win situation plays a key role. The respondents mention that there needs to be a mutual understanding for the creation of shared value. Lasting success cannot be feasible without positive outcomes for other parties involved. While the degree of innovation and excitement creates advantages in the market for new entrants, the value proposition has to be improved in order to keep the advantage constant. Finally, a well-developed proposition includes socio-economic benefits and consolidates the position of the company in the market.

## 4.6 Key partners

Based on the attributes in previous steps, the venture continues to search for matching partners. They play an essential role in implementing and facilitating business, especially in Rwanda, where there are strong ties within the local communities. The selection of a suitable partner for different activities to conduct business is important. Therefore, the roles for partners can be diverse. Even more so, with a focus on sustainability since partners can create a long-term effect that outlasts short-term ups and downs.

The existence of strong partners plays a significant role in a solid business model. Even more so, the integration of financially strong investors. In Rwanda, the majority of such come from abroad and often represent a government or non-government organization.

*“I would say the foreign non-profit investors, so the NGOs play a huge role [...].”*

– Gabriel Ekman, Founder BAG

Also, the respondent Pascal Murasira highlights the role of foreign investors. There are different opportunities for ventures to receive funding. Most of that is foreign investors that focus on impact in developing countries. With a focus on social problems, NGOs were the most important investor in Rwanda, however with an increasing number of start-ups, private foundations and especially VCs see the potential in the East African market.

Pascal Murasira shares the importance of looking for foreign investments. While the local government builds infrastructure for new businesses, they are more conservative with their investments than other investors are. Partially due to the high amount of planning and administration that goes into the budgets. Also, due to the lower risk that a government is willing to take into consideration when investing in a company.

*“Yeah, so these are some companies that are raising the funds now, from NGOs, from private foundations, but also from VCs. Of course, the government does not necessarily want to take a risk that private businesses would [...].”*

– Pascal Murasira, Norrsken Kigali

The importance of local communities as a key partner is highlighted by Gabriel Ekman. The ties within the social environments are robust and built around hierarchies. Therefore, the influence of local leaders on society is tremendous and has to be considered within the business.

*“So, everyone grew up in some kind of village setting where there is a very tight knit community around your neighbors, your district leaders and your family leaders. So, every families are built around this network of 1000s of people that basically assemble themselves in the family, even though there are families. So, communities are something that’s really been ingrained, I think, in the whole of the continent. “*

– Gabriel Ekman, Founder BAG

In addition, the government is described as a key partner by the interviewees because of the relevance for the creation of a business environment. The role is described as a partner who is indirectly involved in a business. Therefore, the influence of a government on a company is very important since it builds the environment and infrastructure to do business.

*“The role of government is not to be involved. Ideally, the role of government should not be to be involved in the marketplace. But it should be about creating an environment where you have a proper, where you can operate freely, but also where you can have customers easily. So, like regulation and creating a conducive environment. “*

– Pascal Murasira, Norrsken Kigali

More direct involvement of the government in a company is described by Per Lanevik. The opportunity to create openings that need solutions from companies. And therefore, the connection to the relevant authorities creates lasting advantages for a venture. As previously mentioned, the creation of win-win situations provides lasting positive effects. In the case of politicians, their aim for socio-economic benefits provides chances for ventures.

*“Do you have some authorities who are looking into some kind of solutions, who is talking to some big investors who are interested to do something, and suddenly you have like a politician say, Okay, we have a person from this country coming back and have a lot of money, I want to be part of development in this country, if I can find some nice project that that person like, he likes me and say, politicians, and I can be elected again”*

– Per Lanevik, Adviser

A holistic view represents the opinion of a number of respondents. The respondent argues for the strong relationship between economic and social benefits. It is a clear statement that includes the core idea for the creation of responsible employment. It describes a state that relates to socio-economic benefits which share a direct relation and have short-term benefits.

*“And the more investors we can bring in, the more funding we can generate in the region, the more jobs will be created, the more value will be created, the more taxes this business will be paying, the more resources the countries will have, and the less reliance on international aid. And the more resources they have to invest back into society to education, access to clean water, access to electricity, and these are the basics that the rest of the world takes for granted.”*

– Eric Lundgren, Chmn. Libriker

To summarize the section about key partners, the respondents highlight investors, communities and the government as the highest relevance. Investors in Rwanda are foremost

from abroad and support changes in Africa. The government has a more passive role and is not part of the day-to-day activities. However, the respondents argue for the government as a facilitator for the right environment to conduct business. For small ventures, close interaction with partners provides benefits that support the proposition of a venture. It furthermore provides insights for further local collaborations. Also, especially in developing countries, local partners mitigate the disadvantages of missing ecosystems for businesses.

#### 4.7 Key resources

A description of the most important resources within a business is mentioned in this section. Other than the majority of the other fields of a business model, this part describes only internal aspects.

The interviewee underlines that despite a focus on socio-economic impact, the environmental side can never be forgotten. A balanced consumption of materials in order to create social and economic sustainability is necessary.

*“[...] a good balance of course, but you can’t actually do anything that has a negative impact on nature.”*

– Per Östling, Adviser

Rwanda soon faces an increasing number of well-educated students that the local market cannot provide with sufficient employment. Pascal Murasira, therefore, mentions the importance of ventures that keep the supply and demand of jobs in balance. The need for stimulating jobs is high and cannot be covered solely by the government anymore.

*“And traditionally, the governments were seen as a reliable source of employment, that could work in the public sector. But that’s no longer the case. It’s just too many people, too many educated young people.”*

– Pascal Murasira, Norrsken Kigali

Unjust treatment of employees, directly or indirectly, will have a bad influence on a company. Pascal Murasira describes the consequences of employees and their environment as harmful for any business activity. That can be direct issues such as sickness or dissatisfaction. In addition, it applies to indirect issues such as air pollution, which will affect the venture in the long run and poses, therefore, a wrong business decision.

*“[...] if your employee comes to work unhappy or like a family member was sick, maybe because of the pollution you are sending around in the air on the meeting or on your factory, then that’s also bad business decisions.”*

– Pascal Murasira, Norrsken Kigali

Per Lanevik mentions that the survival of a venture is linked with its employees. He argues that employees also have to have the chance to act in a sustainable way. The successful establishment of a venture requires opportunities for employees to get the necessary resources to act sustainably.

*“[...] if you run a company, you need to have sustainable employees [...] it’s a matter of survival for the business.”*

– Per Lanevik, Adviser

A holistic approach is drawn by Per Lanevik as he describes the need for both social as well as environmental sustainability. He argues for the relevance of asking detailed questions about the employees and the environmental impact of a venture. Furthermore, he claims that once the initial questions are solved, a company has to improve its sustainable offer further.

Finally, he argues that in the best case, the treatment of employees and the efforts for environmental sustainability should be analyzed by a third party. That allows the venture to speak in facts and to demonstrate the made improvements.

*“Are they environmentally friendly? The employees, do they feel good? Do they have a nice salary? And next, is the storage run by solar panels, or is it run by diesel? What it is, so in every aspect, try to look into is there a better solution either locally, and then you can make a big solution and much more well recognized in that area. [...] and use that as a diploma so to speak, as facts [...]. “*

– Per Lanevik, Adviser

The summary of the part underlines the importance of the employees. This part is often forgotten, especially when it comes to profound changes in the business model. Their present and future wellbeing has a crucial impact on a venture. Also, the long-term effect of satisfied employees in a developing country cannot be stressed enough. It creates safety and stability, which adds benefits to the entire society. The creation of a healthy relationship has to be in focus. Furthermore, ongoing improvements of the environmental impact should be considered. One approach to quantify the efforts is by using third parties.

## **4.8 Test and iterate Business Model II**

Based upon the previous steps as well as the first iteration, this accumulation of steps carves out the value proposition. While it represents the final steps of BMI, it is important to note, though, that it is an altering process and subject to continuous iteration. The second overarching move includes the three remaining steps within BMI. Heikkilä et al. (2018) mentions the use of IT, the design of a revenue model as well as the value proposition as the remaining steps.

### **4.8.1 Utilize IT**

The *Key Activities*, as well as *key resources* from the economic layer, are often the figurehead of a company’s responsible behavior. The respondent argues, though, that this does not take it far enough, and CSR is instead there to satisfy the shareholders than to act in a sustainable manner. CSR does only respond to internal activities; however, it does not actively work on outside improvements.

*“With CSR. It’s not for us, like as a business, it’s for the stakeholders and external stakeholders more of right, and how to please them, how to improve our image to them. “*

- Abir Hossain, PM Juteborg

Highlighting the importance of going further than just CSR, Pascal Murasira mentions the changed behavior of consumers. With a high focus on consciousness, the consumer acts as a driver for sustainability in some regards since simple CSR activities are not enough anymore.

*“So, it’s really time to move beyond that kind of CSR or like, impact, and really make it part of who you are as a business. In our generation, they are making conscious purchasing decisions based on you know, these values. “*

- Pascal Murasira, Norrsken Kigali

In order to understand the materials used and their impact on the environment, the respondent argues for a focus on circularity. It utilizes the advantages of the mill in terms of recycling and can then be integrated into a customer's supply chain.

*"[...] circularity is very focused towards product and their solution. "*  
- Abir Hossain, PM Juteborg

The section treats mainly internal processes and is therefore directly related to business. In order to save efforts, companies include these factors within their Corporate Social Responsibility. However, that is only one part of a SBM. A new addition to the discussion is the approach to focus on the circularity as proposed by a respondent. LibriXer does have a high potential to improve the supply chain of companies in that regard.

#### 4.8.2 Design revenue model

One commonly used excuse for unsustainable behavior on a company level is the cost factor. While that is partially true, it is a quick pretext to not tackle a problem. Especially in developing countries, the focus is on short-term economic benefits. However, the respondent argues that this is a faulty assumption. It is instead the other way around; that when seeing the bigger picture, ventures cannot afford not to think sustainable.

*"I think that sometimes you wrongly connect sustainability with higher costs [...]. But you can be smart down there too and implement small solutions which are better than before and a little bit more sustainable. I say you can't afford not to be sustainable."*  
– Per Lanevik, Adviser

As a result of their close cooperation with the customer, Eric Lundgren mentions clear disadvantages of small-scale production compared to a more revenue-driven mass production. Therefore, their equipment will, in direct comparison, always be on the more expensive side than the competition.

*"I can never compete on cost. I can never be an important part on the apex, the cost for the equipment, we always got to be a little bit on the expensive side, because we are dealing in not enough numbers not enough focus not enough mass production."*  
– Eric Lundgren, Chmn. LibriXer

Regarding an expansion into the African continent or more specifically into Rwanda, Gabriel Ekman mentions high costs. It is not enough to research necessary data online, but the creation of a sustainable business requires the venture to be on site. The creation of own experience consumes time and resources that have to be considered in the revenue model later on. Also, the role of the entrepreneur in the venture plays a role. Hiring a third-party consultant accelerates the process, but it cannot replace an own engagement.

*"But it's very hard for specific sectors to get a good overview of a sector online. You need to physically be here to be able to work with your sustainability and create experience yourself, which costs a lot of money."*  
– Gabriel Ekman, Founder BAG



Regarding the revenue structure of a business, Pascal Murasira mentions the government as a demanding customer. While projects in regard to sustainability often relate to the government, their high administration and long-term planning create challenges. Obtaining authorities as a revenue stream requires a high initial input and the ability as a new venture to wait. Years can go by until an income from the government is realistic.

*“But that cost, you would not expect the government to pay for it, unless they have budgeted two years ago.”*

– Pascal Murasira, Norrsken Kigali

Regarding the link in between the layers of a sustainable business model, Per Lanevik says that economic success will follow environmental and social impact. While a revenue stream needs to be covered, it should not be the first thing to worry about but instead comes naturally.

*“[...] if you have social an environmentally business model solution, the economic business model will come [...].”*

– Per Lanevik, Adviser

Pascal Murasira mentions the close connection in between social benefits and positive outcomes for the government. A successful business adds money to the economy of a country. That additional resources can then be used by the authorities to support social initiatives in different aspects.

*“So, if you’re creating value, you are either employed or bringing investments, then that’s great bringing in money the economy, which generates resources for the government.”*

– Pascal Murasira, Norrsken Kigali

Examples of such social benefits are stability and peace within a country, according to Pascal Murasira. Such improvements on a big scale are a driver for governments to invest in growth and, therefore, businesses. While that does not relate to instantaneous effects in the communities around a venture, the benefits affect society in its entirety.

*“Yeah, social, economic. Things like stability. Like peace. [...] that kind of social aspects also is the economic side that country hopes to grow from.”*

– Pascal Murasira, Norrsken Kigali

In regard to the market in Rwanda, Per Lanevik talks about environmental sustainability as a consequence of social sustainability made. That requires the business to think alike and allow the three layers to interact with each other without prior extraction of the benefits. The local challenges in Rwanda are of a social nature and therefore play a more critical role than the environmental issues. In this case, the local challenges should also be considered as such and put the environmental issues in the second place, but without neglecting them.

*“So, for me the environmental sustainability is more hopefully a positive result of other parts where you start to think about social sustainability about health sustainability, entrepreneurship sustainability.”*

– Per Lanevik, Adviser

For Eric Lundgren, the environmental benefit is at the core of the company. The argument is that the waste of raw material goes against personal preferences. The advantage of this mindset can then reflect in social and economic benefits.

*“I really hate to waste things. So, for me, it was a key to utilize 100% of a raw material.”*  
– Eric Lundgren, Chmn. Libriker

An important difference is mentioned by Per Lanevik as he divides between environmentally friendly and sustainable value. While an efficient mill can be environmentally friendly and resource-saving, it still consumes the product. A sustainable model, however, also regards the long-term perspective to ensure benefits also later on.

*“It also depends on what you put in the environmental business model. Is that the value? Am I environmentally friendly or sustainable?”*  
– Per Lanevik, Adviser

This summary argues for the costs and benefits of the three layers. They are divided into economic costs and revenue streams, social costs and benefits, as well as environmental costs and benefits. The respondents argue for the close connection between the layers with a focus on the social and economic relation. That is primarily of interest in the local market. To ensure safety and security in the country, social and economic benefits are strongly tied together.

#### 4.8.3 Develop viable proposition

Gabriel Ekman mentions the importance of sustainable SDGs in Rwanda. Obtaining accurate descriptions, they are a straightforward way to measure and communicate the created value. The surroundings of a new venture highly focus on the offered solutions for the SDGs by a business. Therefore, they are of high importance.

*“[...] there’s a lot of focus on the SDGs and sustainable impact.”*  
– Gabriel Ekman, Founder BAG

The respondent argues for the need for SDGs in order to create a robust BM. Gabriel Ekman describes it as a framework that consequently contains the proposition of a venture to its surroundings.

*“Sustainability is usually connected to the SDGs here so [...] you use it as a way, as a framework to be able to measure your impact and measure the work that you’re actually doing [...] we really need SDGs is to build a good business model.”*  
– Gabriel Ekman, Founder BAG

Besides the obvious SDGs, Gabriel Ekman argues for the long-term perspective of a new venture. In order to create sustainability, it is not enough to create a single solution but much rather to establish a firm. That includes then the number of reoccurring customers, the number of partners that are tied to a company but also the revenue and local impact of a firm.

*“I would measure sustainability of amounts of long-term users, amounts of partnerships, amount of revenue, amount of impact”*  
– Gabriel Ekman, Founder BAG

Pascal Murasira describes the need for ventures to focus their activities on a minimal number of SDGs, which should ideally be as low as one. A focus on a smaller number sharpens the viable proposition and prevents a unfocused, diverse offer. In the case of Rwanda, where social problems are the country's biggest threat, Pascal Murasira argues for the economic value that then creates chances for employees in the country. They provide an essential tool for a new venture's surroundings to understand its proposition and viability.

*“But my personal opinion is that it's never a good idea to try to do many things at the same time. Just pick a few or ideally one, and really do that very well. And so, economic value, but also the jobs they create. Those are two main metrics. “*

– Pascal Murasira, Norrsken Kigali

The section around the test and iteration of the value proposition focuses very much on the work around the SDGs. According to the interviewees, they provide a clear structure to show the actual value created. In addition, they connect the layers of economic, social and environmental value in highly specified goals. The respondents have though, different opinions about the number of SDGs that should be considered by the compaines. While some see it beneficial to cover more with their business, other respondents highlight the need to focus on just one or very few.

## 5. Analysis

The analysis and discussion focus on the connection between the empirical findings from the conducted interviews and the interactions with the literature review. Observations from the authors develop the analysis further. For clarity, this chapter is based on the same structure as the chapter above, and a thematic analysis was conducted matching those aspects. The aim is to outline the discussion around sustainable business model innovation.

### 5.1 Introduction and approach to analysis

The analysis follows the model of BMI for starting a new venture (Heikkilä et al., 2018). The themes are built around the individual steps in combination with information that is frequently mentioned by the respondents and therefore is vital for the process. This approach reflects the most frequent topics of the empirical data in the proper order to fit the BMI process. The themes which are the center of the analysis are, therefore:

- Market exploration
- Test and iteration of the Business Model
- Key partners
- Key resources

The mentioned themes include subcategories which are mentioned on a frequent basis in the empirical findings. Due to the high number of codes from the interviews, the table below provides an overview in a compressed manner.

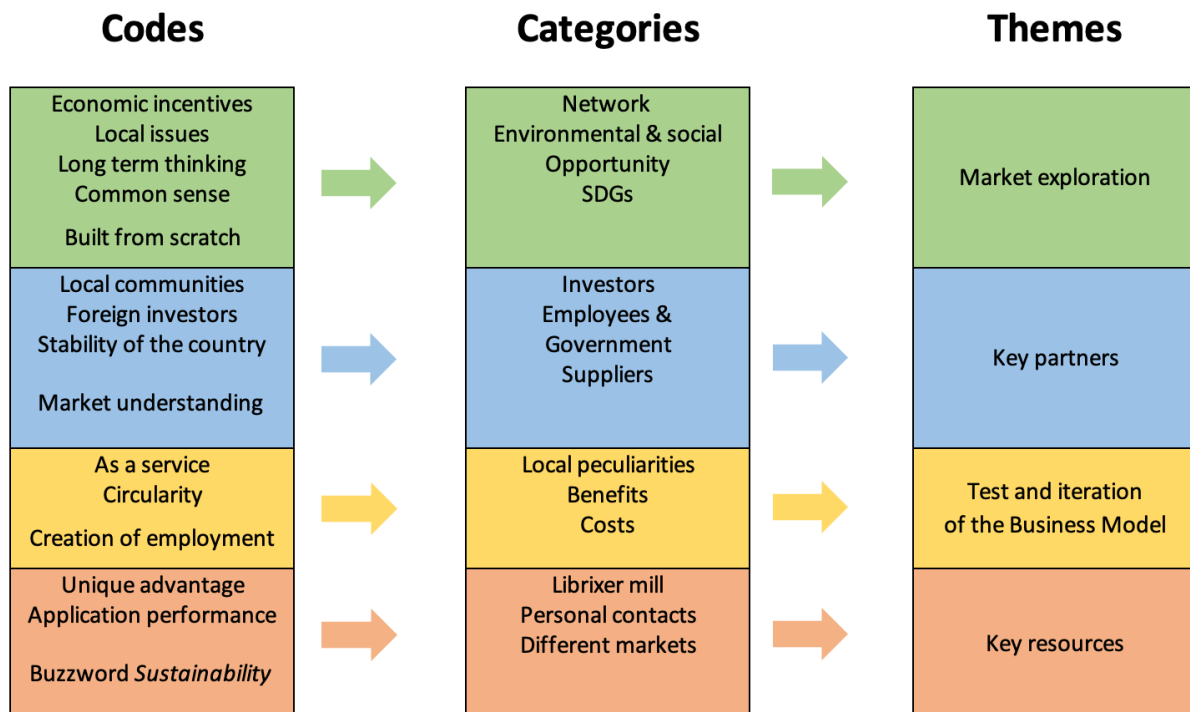


Figure 1. Thematic analysis with codes, categories and themes.

## 5.2 Test and iterate BM

### 5.2.1 Explore the market

The exploration of a market is seen as the first step of a venture to find a new business opportunity. While it is not part of the BMI itself, it is a preparation before the subsequent process. LibriXer has an approach of market exploration where the company relies to a considerable degree on their own network. From the beginning, the opportunities grew from lasting contacts, in individual cases for more than 20 years. In doing so the company saves expenses for new customer acquisition. According to the company, they are delighted with that strategy, however noting that it limits growth due to very personal interaction with the customer.

The market analysis represents the starting line towards new business development. That is not limited to sustainable innovation but concerns new business development in general. In this step, a business seeks to explore markets for its intended value proposition. There are various factors that influence a company's market analysis, such as the market size, the existing competition or the connections that a company established. A positive outcome is when the expected value proposition matches with the intended market. When the venture eventually finishes this step, the actual BMI that follows is based upon these findings. Nevertheless, it forms the basis for the process afterward and is therefore conducted thoroughly

The interviewees strongly suggest using the SDGs as a filter for market exploration. In that way, the company can clearly communicate its possibilities and find opportunities where the technology can be applied. However, the respondents have different opinions about the use of the SDGs. The opinions differ in the number of SDGs that should actually be applied. While some respondents argue for focusing on just a small number, others prefer to work on as many as applicable.

The advantage of the SDGs in regard to market exploration is the contained focus on social and environmental problems. In order to create a sustainable business model, it is crucial to start off with the proper focus, which should be on the resolution of local issues. The findings underline that need, especially in a market such as Rwanda. The interviewees stress the importance of local market exploration in order to understand the customers. While from a distance it is only possible to predict features about a customer, only exploration on a local level can ensure this crucial information.

The empirical findings suggest two main drivers for opportunity recognition. On the one hand, there is the own network. For a small venture with limited resources, new business cases from the own network are of high importance. That is also mentioned in the literature by Anderson et al. (2007) who describes the importance of the network. On the other hand, there is the collaboration between new ventures and incumbents, especially in a developing country where the existing network does not provide the necessary support.

The applied literature suggests different drivers for sustainable business models. Jørgensen and Pedersen (2018) mention the attention to internal insufficiencies (Responsibility) as well as the attention to external insufficiencies (Opportunity) as the main drivers. For young ventures, such opportunities are then especially the selection of social and environmental issues. The path for internal responsibilities is minor due to the small size of the company as well as an existing product with high potential. Therefore, the data from the interviews, which suggests the network as one main driver, is in line with the path to find and attend external insufficiencies from the literature.

### 5.2.2 Know my customers

The main reasons to know the customer is, on the one hand, the ability to focus the efforts and, on the other hand, the reproductivity. As the initial step that follows the market exploration, the venture has to invest resources into the definition of the right customer. The better a company can understand their customers, the better they can adapt their product and eventually the revenue streams. That applies to sustainable business model innovation as well; however, it also takes the end-user and the use phase into consideration.

Such a definition of the customer includes features like size, industry, partners and many more. In this instance, where the customer is also a business (B2B), these features differentiate fundamentally from descriptions of private customers (B2C).

For LibriXer, it is imperative to find customers who will value the sustainability perspective and are therefore agreeing to carry the advantages and disadvantages of the service. In the past, the company struggled to focus on a defined customer. However, business cases of multiple industries, countries and sizes were approached. That resulted in little success and a low learning curve. The findings suggest working on a clear definition of the preferred customer and shaping the then-following activities accordingly. In fact, the respondents shared the view that such a loose definition of the customer is one main driver for problems in a young company. It creates flaws during the entire BMI that follows. However, the empirical data also shares an understanding of the difficulty of this task, especially in the case of LibriXer, where there is an existing network of customers. Actively declining customers because they do not fit into the preferred scheme certainly requires much courage.

In addition, the respondents highlight the need for closer integration of the user and end-user. Also, just as it applies to the customer, a clear understanding creates lasting benefits which remain during multiple business cases.

Positive for LibriXer is the current relationship with the few existing customers. With personal relations that last for over 20 years, the company is very close to the customers. The venture also gathers a lot of knowledge about markets from these relations and is therefore very keen on maintaining them. Eric, as the primary contact for customers, is a crucial part of the company as it is today, and the interviews stress the importance of such well-connected people for new ventures as part of the network. Such an individual saves the company considerable amounts of customer acquisition costs and allows more accessible communication than with new and, therefore, unknown customers. However, as previously mentioned, the close connection also brings disadvantages in the form of a lacking focus on a defined customer.

The literature shares the need for a clear understanding of the customer. The more precise the definition is, the more accurate can the following parts in the BMI be (Joyce and Paquin, 2016). That puts the customer into segments and helps the venture to understand its buyers. As the BMI is tailored to fit a specific customer, it requires as much information about it as possible. Literature also suggests building personas that reflect the features of a customer group.

### 5.2.3 Develop viable proposition and BM

This stage concludes the information from the prior inputs and iterates the offer towards a better value proposition.

Besides the economic value that the company provides to the customer, this step also includes the social value as well as the functional value. For this approach of a SBM, these factors share the same priority. The social value and functional value are key elements in order to create a sustainable business.

The data clearly states the need for all three layers for a venture. The respondents agree that nowadays, it is not enough for a company to offer only an economic value to its customers. Especially since incumbents often have high pressures on their sourcing techniques in order to prefer sustainable solutions that reflect or even improve their own activities. Therefore, the respondents propose a high interaction with the local community. That does not only create trust but also ensures that the necessary values are actually created. This seems to be an easy task; however, in countries like Rwanda, access to data is limited. To understand the local communities, it is, therefore, indispensable to be on-site and spend time. The responders agree, though, that this is certainly not an easy task for poor, early-stage ventures. Cooperation with local companies can ease that process and save valuable resources. However, the absence of own personnel poses the risk of lost information along the line.

With the information that the company gathered during the market exploration and the customer segmentation, it is now possible to compare it with the intended value proposition. The development of a viable proposition at this stage is the key for ventures to summarize the achievements from the previous steps.

It is a first test to see whether or not the sustainable value proposition actually fits the desired customer and user.

The literature stresses the need for companies to “get out of the building”. Many new ventures fail because they do not develop their value in line with the real needs of the customer or society. Clear evidence can only be found from extensive communication with the audience and should be executed by own employees or even the founders. In that way, all information is gathered, and own assumptions can quickly be iterated. However, when companies choose to hire personal that does this job, there is a high risk of losing important information along the line.

While this step does not represent the final value proposition, the goal though should be to iterate previous assumptions with hard data. As a conclusion from this step, the Business Model Innovation process works afterward with a noticeably lower number of assumptions and is, therefore, closer to reality. Testing an entrepreneurial assumption results in a higher degree of certainty and therefore should happen several times throughout a BMI (McMullen and Shepherd, 2006).

### **5.3 Key partners**

The empirical data highlights this step as the most important one in order to create a sustainable business model. The reason for that is the long-term effect it has on the business. The creation of relationships with partners supports a business through ups and downs and is less dependent on the success of an initial project. That implies the sustainable aspect, which adds local communities and suppliers. There are several partners in Rwanda that play a key role in the success of a new venture. From the data, it is shown that NGOs have a significant influence over the ventures in Rwanda, but also in other regions in Africa. This is because the government would rather not take risks in new ventures; instead, they take the role of a facilitator. Rwanda government does invest, but what is decided today will get money in two or more years. Therefore, much foresight is needed if a venture wants the government as an investor. On the other hand, having support from the government is important as it will simplify relations with other stakeholders and municipalities.

The information from the interviews suggests an even stronger bond with local partners. That applies on the one hand to understand the local business. At the same time, a short-term business

might be sufficient with only collected information from the internet. In a country such as Rwanda, much information can only be collected on-site and is not available online. Furthermore, the advantage is to create lasting relationships. By that, a long-term effect can spill over various projects and therefore create benefits. Such a strategic partnership building is seen by the respondents as crucial to succeed and therefore to be sustainable.

On the other hand, the definition of sustainability is time-dependent and subject to local and personal influences. In a fast-changing country such as Rwanda, the desired sustainable benefits are very likely to change on a national level. That creates problems since ventures cannot rely on long term strategies from the government. In order to mitigate that risk, the interviewees refer to solid partnerships as a way to secure value creation in the long run. Partners for LibriXer should therefore be chosen with a strategic mindset and not only according to short term attributes.

The importance of partners is mentioned by literature such as Joyce and Paquin (2016). The relationships that are built for economic value require like-minded business partners. Also, partners can support worldwide growth and therefore create sustainable value that goes beyond economic.

## **5.4 Key resources**

The key resources were highlighted by the respondents as an essential part within SBMI. For LibriXer, the key resource is clearly the unique milling solution as the center of the company and the reason for its existence. According to the firm, the mill offers advantages that traditional mills cannot achieve because of the unique airstream that splits the material.

Also important to mention is the role of Eric Lundgren in the business. It is due to his network that he discovered the mill and brought it to the market. Also, the current business cases are a result of his network within Europe and the US.

In regard to Rwanda, especially the proper treatment of the employees. The responses described both the short terms well as the long-term effect of satisfied customers on the venture. Especially the long-term effect plays a significant role in such a quickly changing environment. That describes attributes such as increasing purchasing power, rising education, and a more stable society.

The importance of the wellbeing of the employee and their families plays a crucial role in conducting a sustainable business. Employees can certainly only work at their best when they are mentally and physically in good condition. The literature goes further than the empirical data and mentions additional programs for education and wellbeing as part of a sustainable business (Joyce and Paquin, 2016).

However, it also plays a role in creating a lasting environment that will secure the future of the venture. A good relationship with employees does certainly create socio-economic advantages in the long run. Society can therefore grow economically as a whole. Overall, the respondents argue for the employees as a key to build a sustainable business model.

Also, there is the building material that is used in order to construct the mill which eventually creates the value proposition (Joyce and Paquin, 2016). The mill itself is made from stainless steel sheets and manufactured in Poland and Sweden. LibriXer uses external production partners to create the necessary elements and the final construction takes place in its own facilities in Sweden. For an international approach, the business would look into local



production options which enhance the interaction with regional suppliers. That also saves costs for logistics and creates a comprehensive overview of the materials used. Another stake for Libriker is that very little material is necessary to build the machine. Other than the competition, the Libriker mill requires only a small number of parts.

## **5.5 Test and iterate BM II**

### **5.5.1 Utilize IT**

The key activity is the milling of products as well as the proper maintenance of the equipment. In addition, the company's aim in Rwanda is to include a variety of stakeholders into the business and be in an open exchange with the surroundings.

The data suggests that sustainable business cases should obtain a close collaboration with their personnel to create a lasting impact on site. Also, the education of local personnel is of high importance for the society. To raise the standards in society in the long run and for the creation of peace in a country, well-educated and therefore well-paid jobs are essential.

### **5.5.2 Design revenue model**

The most extensive work ahead for Libriker regards the revenue model. By now, they offer individual solutions to their customers that ranges from the aim to sell entire production plants to renting out the mill at an hourly rate. The preferred solution by Libriker is to find a model for a subscription of the mill, where Libriker helps designing the plant and takes on the responsibility of the mill's continuous running. If Libriker would want to enter Rwanda with their product, which would be an opportunity for them, they need to consider many things. In that case, it is very important to find the purchaser for their service.

The empirical data clearly states the difficulty of having a government as the customer. Long budgeting periods, low level of risk-taking, and a high degree of administration make it very hard for companies to actually get paid in time, which is very important for new ventures due to the low resources. Rather appealing is to have the government as the receiver of the service, however, also having foreign investors as the payer. There are many opportunities that finance sustainable actions in Africa and are therefore a valuable stream of income.

In order to create a sustainable revenue model, the respondents stress the need for sustainable economics. That describes the establishment of an income stream which covers occurring costs. The creation of economic value is what eventually drives a business and allows it to sustain itself. That part is often forgotten when thinking about the creation of a sustainable business. A venture has to be able to sustain itself and its stakeholders economically, otherwise it cannot have an impact on the society and the environment.

In the case of Rwanda, the respondents highlight the importance of social value that uplifts society. It is imperative to create value for problems that the country actually faces. The government has a high interest in the creation of employment to create stability in the country. Unproductive, but often seen, is the creation of solutions for problems that do not even affect the society. The data from the conducted interviews suggests "... as a service" as a good way of treating the revenue model. That can deliver very flexible and tailored business to the customers. Furthermore, there is the opportunity to improve the efficiency of a single mill by connecting the number of customers with each other.

However, the revenue model has to gather enough profits to cover the expenses. The interviewees are keen to mention that a business needs to be able to sustain itself. Otherwise, there is no chance that a venture can last, and it, therefore, does not cover the economic part.

### 5.5.3 Develop viable proposition

Similar to the first iteration loop, this step discussed the fit of gathered data and improved the viable proposition accordingly, however, with noticeably more collected information than in the previous iteration.

In this part, the data shows most space for BMI. It builds on everything done up to this point but is packed together as a viable proposition. First and foremost, it can be seen in the data that having started with defined SDGs is recommended. If Libriker has the goal of having an edge as a sustainable company, it seems like starting from the local SDGs in Rwanda is an excellent way to go. That proposition eventually defines the acquisition of investments from an impact investor, NGOs or communities. In order to conduct a viable, sustainable proposition, the company has to differentiate between its sustainable product and a sustainable business model. That step comes from the empirical data where respondents suggest that the mill itself is sustainable and therefore is the business. That is shared by some respondents but is an incorrect assumption. The respondents related to Libriker argue for sustainability as common sense since the mill creates a higher output per input than the competition. The SDGs were already mentioned as the very beginning of problem recognition and also as part of the first iteration phase. The empirical data highlights the importance of refined SDGs towards stakeholders, and therefore this final step includes a final iteration of them. This step eventually results in a defined proposition as well as all features of a defined and iterated sustainable business model.

## 6. Discussion

*This chapter aims to discuss the answer to the research questions based on the previous findings and analysis. The researchers want to provide key takeaways as well as managerial and theoretical implications for the case company. Furthermore, a presentation of the augmented model is made by combining two models to show how to integrate sustainability in BMI.*

### 6.1 Answering the research questions

Below are once again the research questions that the thesis aims to answer:

*RQ1: How can environmental or social issues influence how small- and medium-sized enterprises innovate their Business Model?*

*RQ2: How can a Sustainable Business Model be applied to create a potential business case within pharmaceutical waste for Librixer in Rwanda?*

RQ1: In order to present a condensed answer to that research question, the authors initially combined two models mentioned above to achieve SBMI for SMEs. The conducted research provided valuable additions by combining the two models which are presented in Figure 2. While the sequence of the steps in the model was not changed by the authors, three additional steps represent the collected information and improve the SBMI. Implementing sustainability in the core of a company does not come cheap and requires much dedication to the cause was confirmed by the empirical data. While a typical BMI process focuses on economic aspects, the influence of environmental or social issues requires an additional integration in the BM. Based on the analysis of primary data and theories from the literature, there is evidence for the influence of sustainability issues on BMI. In order to act truly sustainable, it is crucial for a company to integrate that requirement into the core of the BM. A suitable way in doing so is to apply a Start-up BM which ensures the equal implementation of economic, social and environmental aspects. On the contrary, a transformation, diversification or acquisition of an existing model is not recommended since changes would not go deep enough and therefore do not ensure sustainable behavior.

When it comes to the innovation process, the social and environmental issues dominate the exploration process. While economic driven analysis focuses on finding a matching market for a company's value proposition, the empirical data suggests instead locating social or environmental issues. Similar to a standard market research, this phase can be conducted worldwide, however it ensures that a company focuses on the solution for a problem and not on an application for their BM. The result of that exploration can be drafted initially in the directly and indirectly affected SDGs. Furthermore, the process should include additional iteration steps of these drafted goals. While the empirical data advises ventures to specify them early on, it is also important to revise and them during the innovation process. This process finds matching SDGs to the venture's efforts. These are seen by partners as a crucial feature of modern businesses and play a vital role in a venture's value.

Finally, the empirical data stresses an additional iteration for each step with indirect and direct stakeholders. Due to a lacking definition of sustainability, SMEs are advised to conduct an ongoing exchange within their environment, especially in a quickly developing country where

the understanding about sustainable behavior changes regularly. To mitigate that risk, an exchange with politicians, communities and employees is important for a venture.

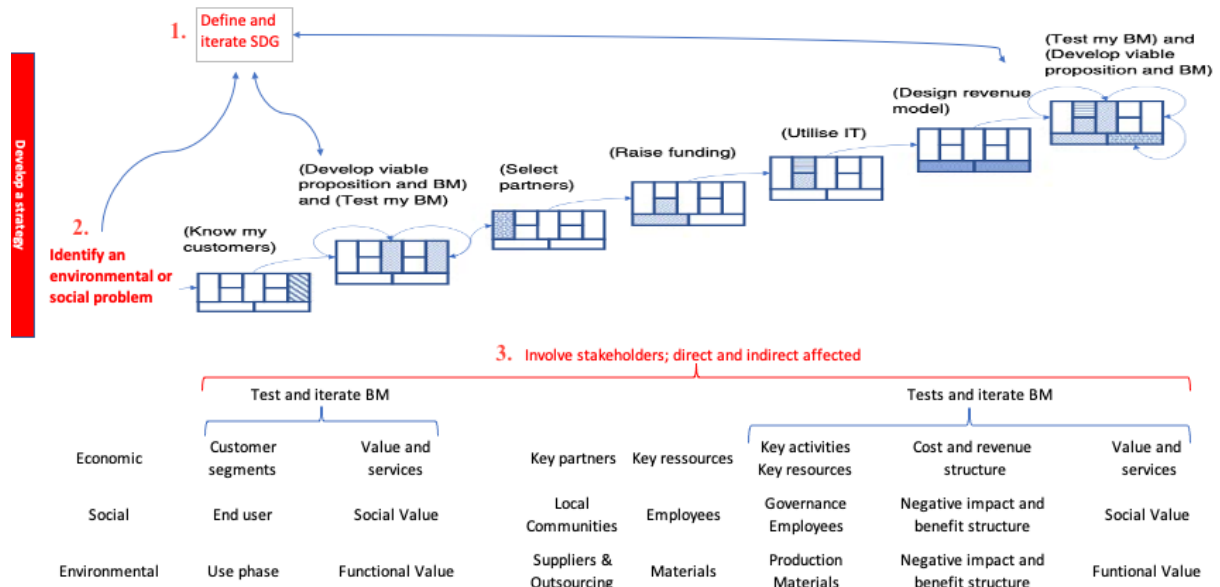


Figure 2. Business model innovation for starting a new business by Heikkilä et al. (2018), with sustainability layers added by the authors

RQ2: This question investigates the creation of an applicable SBMC that includes all three layers. To create a potential business case for Libriker, the collected data suggests that it is imperative to start with identifying an environmental or social issue. Since the Libriker mill's strengths are leaning more towards the environmental side than the social, and that it is suggested in the data to look for social issues in Rwanda, it is crucial for Libriker to find a problem that would create benefits in both fields. This exercise would also help immensely for finding the customer, which in the sustainability case would mean government, impact investors, or NGOs. As stated, sustainability does not come cheap, and even though the Rwandan government invests in it, it will take a long time before a decision becomes a reality. By this logic, one of several potential business cases for Libriker would be to aid the pharmaceutical waste handling in Rwanda. In this phase, Libriker would have all three layers covered since a solution like this would provide revenue by minimizing the number of incinerated materials, i.e., medicine. It would also provide environmental benefits by minimizing the number of unused drugs in nature, as well as providing the opportunity to recycle other materials such as plastic, aluminum and cardboard from the drug container. The social layer would be covered by cleaner water, job creation and helping local communities. If this proposal would not pass the stage of testing (functional and social value), Libriker would have to go back to the first stage and identify a new environmental or social problem that can be solved with the mill. It is not impossible that Libriker could find an opportunity that could create economic value for the end-user, meaning that investments would only be needed for the mill itself and not the operation. In the case of pharmaceutical waste, no real economic value is created, except for minimizing alternative costs for Rwanda, i.e., groundwater pollution, and therefore, someone needs to pay for the mill itself and operating the mill. The steps above include the current difficulty for Libriker to focus and follow up on a specific topic.

If this stage is passed, next would be to select partners. To select partners in Rwanda, the collected data shows that it is imperative to treat and collaborate with the local communities.

This means that the social part of the sustainable BM canvas is most important. Moreover, if possible, Libriker should find partners that have a minimal impact on the environment, which could be, for example driving electric vehicles or contributing to a circular economy. In the pharmaceutical waste case, that would imply choosing local partners for collecting the unused medicine and transporting it to and from the mill. It could also mean finding the right partners for recycling and re-using the other materials produced in the process. A proposed SBM for treating pharmaceutical waste in Rwanda for Libriker is found in the appendix.

### 6.1.1 Practical implications

As mentioned, the preferred model that Libriker wants to apply is a *Milling as a Service* solution. However, this investigation suggests that such a model does not exploit the possibilities of the technology enough. To be competitive in the market, this thesis presented a strong integration of sustainability as a valid option, instead of adding it on top. Therefore, the following logical iteration would be a *Sustainability as a Service* solution. A much more narrowed approach makes the business more unique and attractive towards stakeholders. This is an explored step in literature the authors niched that model further down. To keep material within the life cycle for as long as possible, *Circularity as a Service* is a further inference. The authors believe that this offer can be very appealing to customers and maximizes the potential of their unique milling solution.

### 6.1.2 Theoretical implications

The augmented model in Figure 8 presented in this study is the key theoretical contribution. It builds on previous works within BMI and the creation of a SBM. The model was augmented by combining the BMI path for starting a new business Heikkilä et al. (2018) and the SBMC found in an article by Joyce and Paquin (2016). The model stresses the importance of the iterative process of defining which SDGs that the SME are able to work with. There was no consensus with regards to the number of SDGs, but the data leaned more towards focusing than trying to include as many as possible. Next is the importance of defining an environmental or social problem early, instead of trying to include sustainability in later stages. This process helps the SMEs in the crucial step of market exploration. Lastly, the augmented model showcase the importance of involving both directly and indirectly affected stakeholders throughout the BMI process. This should be done to make sure that the contributions to sustainability, that the SMEs can do, aligns with the stakeholders of the venture.

## 6.2 Future research

During the process of writing this thesis, the authors have identified several aspects that are suitable for future research. These would enhance the possibilities for businesses to create value through an increased sustainable behavior. Based on the findings that emphasize the need for a Start-up approach towards SBMI, investigating alternative BMI paths and their contribution to sustainability would be interesting. That would challenge the findings and potentially create opportunities for ventures that do not want to apply the deep changes of a Start-Up model. In addition, a study with a focus on the customer perspective could strengthen the findings in this thesis. The authors believe that confident stakeholders ease the SBMI process for ventures. Finally, an additional perspective for less innovative companies can be based on this study to research the opportunities with less unique products.

## 7. Conclusion

This research aimed to study the possibilities for small companies to innovate their BM in a sustainable manner. In order to do so, the authors combined an economic BMI process with the Triple-Layered BMC. Therefore, the researchers use the vertical and horizontal coherence of the Triple-Layered BMC. That allows to add these layers to the BMI process, but not to add the layers to an existing BM. Based on the collected data, a new approach was formed. The outcome is an augmented model since it keeps its original outline, however, with certain key aspects that go beyond and incorporate social, environmental and economic aspects equally.

The process is a model that describes the BMI process in seven steps. It, therefore, treats one or more fields of the BMC at a time and moves on to the next step. Crucial is also the two iterative steps that aim to test and develop the viable proposition. Finally, once all seven steps are covered, all fields of the BMC are filled, and the model is finished. It can then be used as the framework to implement changes in the business. There are certain key findings from the conducted research that the authors want to highlight. The conducted research, therefore, contributes to the existing literature with partially new and also shared findings.

First, the data suggest that especially small ventures or ventures with a fuzzy BM should utilize a Start-up process since it will better integrate sustainability. Instead of transforming the existing one towards a more sustainable solution, the better way is to start up from the beginning and build an entirely new SBM. The reason for that is the need to rethink the entire proposition and to the highest degree possible without existing biases. Furthermore, it can also save time compared to squeezing social and environmental aspects into an existing model. Building and executing a parallel SBM next to the existing one is not recommended, based on the findings of this thesis.

Second comes the importance of applying the SDGs. While the respondents in the interviews were not aligned with the number of SDGs a company should apply, they all stress their importance. Also, the importance of utilizing an iterative process to refine the applied SDGs was proven. That ensures that towards the finalization of the process, the communicated SDGs towards stakeholders are watertight, which is especially important for investors or other relevant financial partners. The use of SDGs for a company developed into being one key element to invest in a company. However, internally it also guides all the performed actions towards these particular and defined goals.

Finally, the increased involvement of external stakeholders and local partners seems essential for a successful sustainable BMI process. The research suggests an ongoing exchange with local workers that are on site. Examples of such stakeholders are local politicians, communities, and the end-users. That should mitigate risks and, most important, create a lasting connection with local stakeholders. It is probably the most crucial step for small ventures to create both value for the company and lasting improvements for society and the environment.

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# Appendices

## Appendix A

### Interview guide 1

**Purpose:** Internal view; Customer/user view, value proposition, customer rel./channels,

**Interviewee:** Eric Lundgren, Christian Murray

### Background

- Can you briefly describe your background/the background of your company?
- How did you connect with LibriXer?
  - Who found who?
  - How did sustainability drive the collaboration?

### Sustainability

- What does sustainability mean for you/your company?
  - Does that interest come from the team or the outside?
  - In what way is your own offer sustainable?
- Why do you include sustainability in your offer?
  - Do you see sustainability as an opportunity or a must-have?

### Business Model Innovation

- What is your Business model?
  - How and why did you come up with it?
  - What are the advantages and disadvantages?
- What is your opinion about the LibriXer Business Model? *Explain if he doesn't know*
  - How does the LibriXer Business Model affect your Business model?
  - What are the advantages and disadvantages?
  - How can it be successful in the long term?

### Sustainable Business Model

- How do/would you integrate sustainability in your Business Model?
  - How deep do/ would your changes go? Required or optional?
- How can a “as a service” Business Model be sustainable?
  - Advantage and disadvantage
- How does a Business Model (short term) clash with a sustainable strategy (long term)?

### Sustainable Business Case

- How do you find new business cases?

- What are you looking for?
- Did you consider sustainability as a driver for new business cases?
  
- What is your opinion on Sustainability as a service?
  
- How does the work with a focus on sustainability differ from your previous engagements?
  - Stakeholder
  - Value proposition / Social & environmental value

## **Interview guide 2**

**Purpose:** The Rwandan perspective

**Interviewee:** Gabriel Ekman, Pascal Murasira

### **Background**

- How does Business in Sweden and in Rwanda differentiate?
  - How do the different infrastructures affect new business development?
  
- How does new business development look like in Rwanda?
  - What expectations do stakeholders have to a new business?

### **Sustainability**

- What role does sustainability play in Rwanda?
  - How are environmental and social aspects tackled to date?
  - How is the sustainable impact measured?

### **Opportunity/ Future**

- What is Rwanda looking for when looking for new market entrants?
  - How important is sustainability of the companies?
  - How important is the size of the company?
  
- How are opportunities financed?
  - What investors are there and what do they look for?
  - How does the current change towards an entrepreneurial infrastructure affect investments?

### **Business Model**

- How important is the creation of sustainable value in addition to the core value proposition in Rwanda?
  - How can sustainable value create an advantage for a company?
  - To what degree does the society require sustainable benefits from a venture?
  
- How does a Business Model (short term) clash with a sustainable strategy (long term)?

### **Interview guide 3**

**Purpose:** Indirect perspective; Business Model Innovation; Sustainable Integration; Experience

**Interviewee:** Per Lanevik; Per Östling; Abir Hossain

#### **Background**

- Can you briefly describe your background/ the background of your company?

#### **Sustainability**

- What does sustainability mean for you/ your company?
  - Does that interest come from you/ the team or the outside?
  - In what way is your own offer sustainable?
- Do you see the creation of sustainable values as an opportunity or a must have?
  - How does a company change by a more sustainable product or a sustainable business model?
- How does the work with a focus on sustainability differ from your previous engagements?
  - Stakeholder
  - Value proposition / Social & environmental value

#### **Business Model Innovation**

- What is your opinion about the current LibriXer Business Model? *Explain if he doesn't know*
  - What are the advantages and disadvantages?
  - How can a "...as a service" become successful in the long term?
- How can sustainable value tested, analyzed and iterated early on?

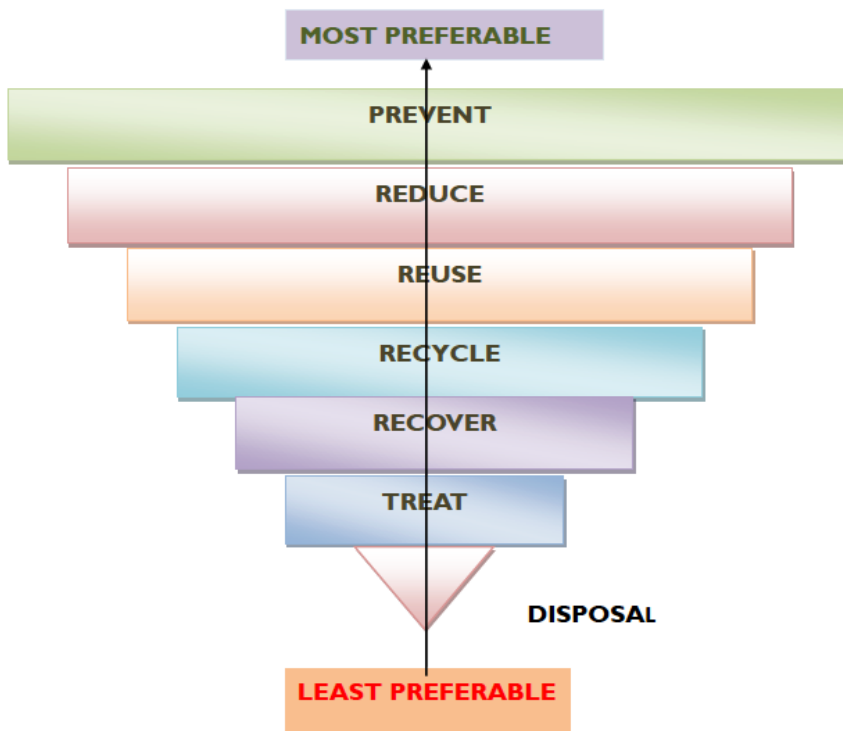
#### **Sustainable Business Model**

- What aspects of sustainability would you integrate into a Business Model?
  - How deep should changes go?
  - How much should a company focus versus how broad should the offer be?
- How can a SBM (short term) be integrated into a sustainable strategy (long term)?

#### **Sustainable Business Case**

- How do you specifically address sustainable business cases with your offer?
  - How does the customer differentiate?
  - Is the sustainability aspect the main driver for your business? If so, please explain why and how?

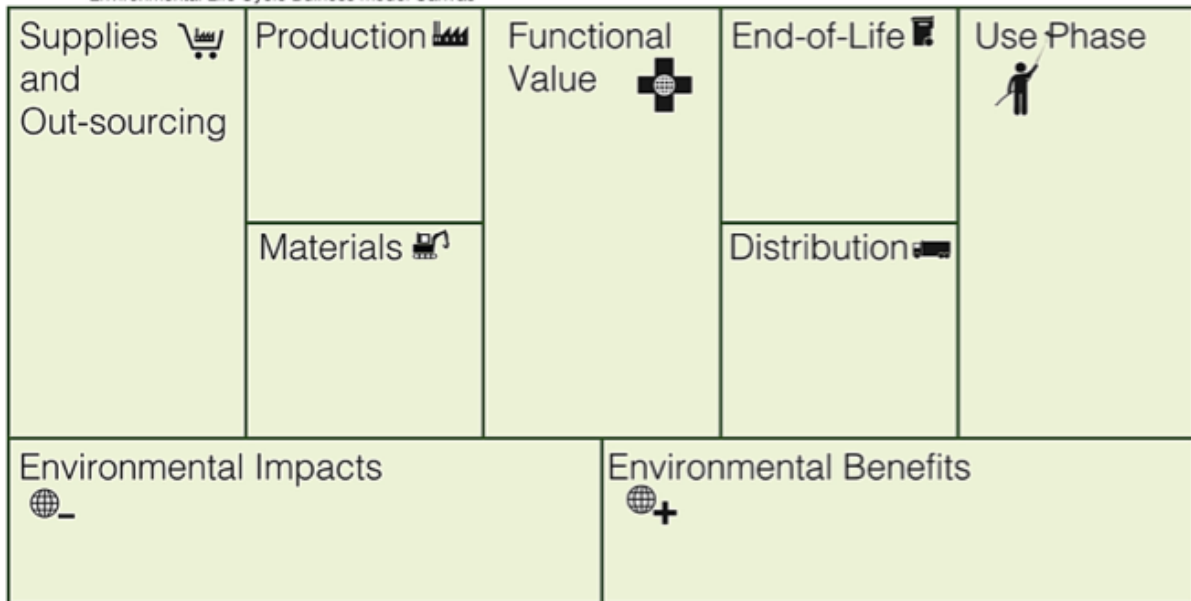
## Appendix B



## Appendix C



Environmental Life Cycle Business model Canvas



## Appendix D

Environmental Business Model Canvas				
Supplies and outsourcing	Production	Functional Value	End of life	Use Phase
Energy and raw material for producing the mill	Production in Poland Fine-tuning in Sweden Ship to final destination	Separation of pharmaceutical waste from its container  Recycling  Keeping active pharmaceutical from the groundwater	Machine to be recycled or scrapped	Energy for uptime Cleaning of machine Land for machine Energy for incineration
	Materials		Distribution	
	Metal and steel Speak to the constructors about how the raw materials are sourced  Low material consumption  1 moving part only for minimized maintainance		Work with local distributors, preferably driving "clean" vehicles Distribution of incoming waste and milled waste Distribution of recycled material	
Environmental Impacts		Environmental Benefits		
Requires land, energy, raw material		Energy savings, better water quality, less medicine on wrong place		

Economic Business Model Canvas				
Key Partners	Key Activities	Value proposition	Customer Relationships	Customer segments
Manufacturer of the mill Customers Investors Suppliers of milling material	Manufacturing of the mill Finding use cases Taylor the perfect solution for every use case Finding key partners for bringing a sustainable solution	Bettering the environment with a faster and safer handling of collected medicine. Energy efficient and cheaper, less manual labor required Sustainability as a service	Co-creation of potential use case All-inclusive solution	Recycling industry Waste management Government
	Key Resources		Channels	
	The people in the company Unique technology Financing from investor Network		Website Network Distributor/Manufacturer	
Cost Structure		Revenue Model		
Value driven costs for producing a mill when ordered Employees Energy		Leasing fees Maintenance fee Installation fee		

Social Business Model Canvas				
Local Communities	Governance	Social Value	Societal Culture	End-User
Collaborate with local workers to collect and mill medicine	Health Ministry Every mill is operated independently in every community	Long-term improvement of communities because of indirect and direct employment in proximity of the mill Long-term improvement of ground water with less risk of multi-resistant bacteria and harmful substances in the area	Feelings of circular economy Awareness of recycling, medical waste etc.	Burn only what is necessary Recycle what is left
	Employees		Scale of Outreach	
	Better water Positive workplace Safe/Secure workplace		World-wide problem, especially in developing countries. If implemented it will effect local as well as national waters	
Social Impacts		Social Benefits		
Can create wealth gaps locally		Job creation, feeling of helping environment, better health, feeling of responsibility		