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Adapting the Business Model to the needs of customer segments in Colombia

The Case of a Solar Water Pump

Master Thesis

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Abstract

Latin American markets have been subject to growing interest to western firms in the recent years. A rapidly growing middle class, above average growth levels and a favourable competitive situation, led many firms to reconsider their strategy and heavily invest into those markets. An endeavour that proved to be more difficult than expected for many firms. Being successful in these markets is not done by simple replication of existing business models and strategies. The market logic of Latin American markets lay down other requirements with respect to a firm's value proposition. This thesis will show that the value a company offers, is perceived very differently depending on a company's target customer segment and its relation to the environment and country specific context. The companies need to adapt their business models and market entrance strategies to be able to target the most promising customer segments and therefore gain sustained competitive advantage.

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List of Abbreviations

AC	Alternating current
BIM's	Business Innovation model(s)
BM's	Business model(s)
CEO	Chief Executive Officer
CNPML	Centro Nacional de Producción más limpia
CRM	Customer Relationship Management
DANE	Colombian National Administrative Department of Statistics
DC	Direct current
DIAN	Dirección de Impuestos y Aduanas Nacionales de Colombia
DIY	Do It Yourself
LIBOR	London Interbank Offered Rate
NGO's	Non-Governmental Organization(s)
PV	Photovoltaic
RETIE	Reglamento Técnico de Instalaciones Eléctricas

1. Introduction

1.1 Problem statement

Latin American markets have been subject to growing interest to western firms in the recent years. A rapidly growing middle class, above average growth levels and a favourable competitive situation in these markets, led many firms to reconsider their strategy and heavily invest in those markets. Pioneer companies in these markets such as Coca Cola or Colgate-Palmolive already generate considerable income within those markets (Gingrich, 1999, paragraph 3). In 2017 for Coca Cola, Latin American markets made up for 27% of its sales (Coca-Cola, 2017, p.9) and for Colgate-Palmolive it amounted to 25% (Colgate-Palmolive, 2017, p.1). However, being so successful within these markets is far from being the norm. Many multinational companies expanding to Latin America also experience considerable difficulties to generate long term growth rates. In many cases the bulge of income generated still remains within their home markets. As Gingrich (1999, paragraph 6) states, these companies mainly follow a “flag-planting strategy”, which he defines as “transplanting existing ‘first-world’ products with minimal investment into a wide variety of new markets, without achieving significant market share in any of them.” In other words, many companies did not yet realize that they must adapt their products, solution offerings and business models to the needs of the target markets. Based on the extant literature about business model generation and a business case, this thesis will try to respond to this problem by presenting a real-world example of how a company can adapt its business model to be fit for the Latin American market. The business case consists of a Swiss company (ENNOS), which produces a solar water pump and wants to expand its operations in Latin America. The analysis will be effectuated on the Colombian market.

From a theoretical perspective this thesis will respond to mainly two gaps found in the business model literature. First, the lack of emphasis on the highly contextual nature of business model generation. The existing business model literature does only rarely consider the type of market an enterprise operates in and no comprehensive framework exists to conceptualize the external dimension of a firm. Second, the extant literature gives only little weight to the time dimension of business model generation. Companies and markets evolve over time. Business model generation models do not sufficiently take into account the different phases of market and business development.

On the practical side the goal is to find a new, tailored business model and strategy for ENNOS to enter the Colombian market. This involves strategic question such as: On which customer segments should ENNOS focus on? What elements of its value proposition are relevant to the Colombian market? What

market entry strategy should ENNOS follow? What are its key resources? In what strategic partnerships should it enter? What distribution channels should it use?

1.2 Research question

As explained above, based on a real business case this thesis will analyse how a company should adapt its business model and strategy to fit and be successful in a developing country.

The following research question will form the basis for the subsequent analysis:

How should ENNOS adapt its Business Model to meet the specific needs of different customer segments in Colombia and what customer segments promise to have most potential for ENNOS?

The thesis will show that customer segmentation is highly contingent on the local market conditions of each country. The socioeconomic and cultural context is a highly relevant factor, when analysing and deciding about which customer segment to focus on. Moreover, the analysis will also show that a company's products and its value proposition is perceived very differently with respect to customer segments. As a consequence, a company always needs to reconsider its strategy and business model if it decides to target new segments. It needs to adjust its marketing, sales as well as its distribution strategy in order to gain market shares.

1.3 Structure and methodology

In chapter 2 based on a literature review of the extant academic literature a brief overview is given about the business model concept's origin, its different branches and definitions. Moreover, it will lay out the fundamental perspective taken in this thesis, which will show up through the whole analysis. The lenses through which the problem will be analysed are based on a dynamic and outward-looking approach to business models. Finally, a general business model generation model with respect to the perspective taken will be proposed. This will also form the conceptual basis for the case analysis of the empirical section in chapter 3. This chapter first briefly explains the case by outlining ENNOS' actual business model. However, also this section is already tailored to the Colombian market and should not be read as a universal BM. Finally, a new refined business model will be proposed for Colombia and specific strategic options will be shown for ENNOS to pursue its market entrance.

Concerning its methodology, this thesis is comprised of a qualitative case study. The results are based on different contacts, discussions, interviews and presentations with government agencies, NGOs, private companies, diplomatic services, import agencies, farmers, retailers and distributors between October 2017 and January 2018. For a detailed list of all relevant contacts made in Colombia see Appendix B.

To get a comprehensive idea about the Colombian market, data was not collected in a systematic manner in the first period of the research process. Every contact that could be made was used to get some insights. Since all started from scratch and neither a pre-existing network to rely on, nor any restrictions were given for the analysis, it was first important to get a general overview about the possibilities for this project.

It was only on the second stage of the research process, starting around mid of November, the data collection process became more precise. Since by then a good general idea about the market could be formed, the decision was taken to focus on the more promising and relevant contacts and issues for the project. For example, it became apparent that for ENNOS it was more promising and less risky to work with the private sector than with the public sector. It became also clear that it was necessary to speak directly with potential end-users such as farmers to recollect data from the field. Only by having also information from the field a concise and relevant analysis would be possible. There were many such decisions during this project. What is important to note is that the data collection became more focused and precise as the research process unfolded.

2. Business model generation model

In the first part of this chapter, on the basis of a literature review, an appropriate Business Model definition will be provided for developing countries and the case analysed in the subsequent chapters. In the second part of this chapter a general business model generation model will be outlined based on the insights from the extant literature. The components analysed here will mainly follow the business model generation model of Osterwalder, Pigneur and Clark (2010). Every component will be presented with respect to the most recent developments and insights from the extant BM literature and related fields and considering the requirements derived from the case that will be analysed in the empirical section of this thesis. We opt for an outward-looking and dynamic perspective, focusing on the industry sector in developing countries. This is the perspective that will be used throughout the whole thesis.

2.1 Origins of BM

The term Business Model has been first used in the late 50's by Bellman (1957, p.8) and later by Jones in 1960, who published an article with the title *Educators, Electrons, and Business Models: A Problem in Synthesis*, using for the first time the term in the academic literature (p.619). Nevertheless, the number of references and publications remained low (DaSilva & Trkman, 2014, p.380), which makes of it rather a recent concept. An analysis conducted by Osterwalder, Pigneur & Tucci (2005, p.3-4), where an electronical search of the number of citations for BM or BM related terms was effectuated on academic publications, revealed that only 30 years later, in the early 90's, the number begins to rise (from 11 in 1990 to 866 in 2005). This trend coincides with the emergence of the internet, which is insofar relevant as the analysis further revealed that BM has most frequently, however not exclusively, been associated with e-business (Osterwalder, Pigneur & Tucci, 2005, p.4). Since then a plethora of different definitions and concepts have evolved leading to misinterpretations and misunderstandings among practitioners and academics alike (George & Bock, 2011, p.83). According to Zott, Amit & Massa (2010) there seems to be little consensus about the concept's definition and its role in theory and practice. All agree that it is of growing importance for success, however no common language has developed yet, partly due to the arbitrary and idiosyncratic use of different definitions (p.1-6). The term seems to include everything from a simple business strategy to elaborated economic and revenue models. (DaSilva & Trkman, 2014, p.379) However, in the recent years also considerable efforts were made towards a more systematic and rigorous definition of the term. (Osterwalder, Pigneur & Tucci, 2005, DaSilva & Trkman, 2014, Andreini & Bettinelli, 2017, Taran, Boer & Lindgren, 2015, Rayna & Striukova, 2016) Although these attempts use different methods and take different perspectives, some rather emphasizing its close relationship with e-business and the emergence of the internet and others

focusing on its innovative nature in connection with BIM (Business Innovation Models), also a growing number of common elements can be found. Before we get to our definition for BM's for this thesis, I will introduce three important categories along which the more systematic approaches try to classify the BM literature. These factors are important for in two ways: First, it will help locate ourselves within this broad and elusive field. Second, these categories will also provide important information about the different definitions' suitability with respect to the situation for which to apply to. In this sense, it will help to find the most appropriate definition for the business case.

2.2 Literature review

Good definitions should be precise, general, bounded, parsimonious, coherent and relevant. These will be the criteria along which the different definitions and approaches for Business Models in this chapter will be analysed. A good definition should be precise in order to be falsifiable but at the same time general enough, as to include all phenomena we want to explain. It should be bounded to what is relevant and define the scope of analysis and not overextend itself to avoid conceptual overstretching. Finally, a good definition should be as simple as possible, without losing coherence and explanatory power. These are the trade-offs and criteria that will be faced in this chapter, but also thorough the whole thesis as they apply to any type of argument. To find a suitable definition for the case, which complies with all those criteria, we will start with a brief literature review on different BM definitions and approaches. (Gerring, 2012, p.58-73)

2.2.1 *Level of Abstraction*

To assess generality, boundedness and precision it is important to know on which level of abstraction a definition or concept is situated. With respect to the level of abstraction Osterwalder, Pigneur & Tucci (2005) distinguish between three main branches within the BM literature: those that conceptualize BM as an overarching concept, those that use typologies by defining sets of common characteristics and those that apply to real world business cases and use specific BM's as a showcase (p.5).

Overarching concept

Approaches that conceptualize BM as one overarching concept often use a rather broad definition of the term. Chesbrough and Rosenbloom (2002) define it as "(...) a heuristic logic that connects technical potential with the realization of economic value" (p.529). Sometimes authors give only a general idea, without defining it, or providing any support. Magretta (2002) for example states that "They [Business models] are, at heart, stories – stories that explain how enterprises work" (p.87). However, most definitions are more systematic and give a clearer notion of the general characteristic of a business model. The bulge of those definitions includes value creation as the central element. Linder & Cantrell

(2000, p.1) for example define BM as a firm's logic for value creation. Similar, Afuah & Tucci (2003, p.3-4) affirm that a business model is a driver for firm performance and competitive advantage by creating value for its customers. In some cases, BM definitions can also take the form of a demarcation towards other related concepts. Osterwalder (2004) e.g. defines BM "(...) as a business layer (acting as a sort of glue) between business strategy and processes" (p.15). Finally, overarching concepts can also take the form of so called Meta-Models. Meta-models are on the highest level of abstraction, which means they form the last element in a chain of backward inductions in the theorization of BM's. As such they are conceptualized as a single basic unit of analysis. Meta-Models often try to capture the essence of a concept by analysing it globally using ontologies, different viewpoints or system theory to capture the general idea of a phenomenon (see Gordjin, 2002, Osterwalder, 2004, Petrovic, Kittl & Teksten, 2002, Demil, Lecocq, Ricart & Zott, 2015) As meta-models, they are born out of the assumption that good theories should be comprehensive and definitions should not be too narrow as they reduce the scope and consequently the explanatory power of a theory (Mahadevan, 2000, p.59). In addition, meta-models with their high degree of generality and abstraction can also serve as a basis from which to deduce further concepts and tools (Osterwalder, 2004, p.2).

Typologies

Typologies are typically on the middle level of abstraction and are comprised of categorizations that are construed around specific common characteristics. They tend to reduce complexity and facilitate comparisons. They can either take the form of sub-classes of a specific model or be applied to specific industries. Sub-classes are categorizations that define types or sub-types of business models by disentangling their common characteristics. (Osterwalder, Pigneur & Tucci, 2005, p.6-7) They are frequently used for BM's in electronic and IT-markets (Rappa, 2006, Timmers, 1998, Weill & Vitale, 2002). In some cases, it also takes the form of emphasizing a BM component such as BM's focusing on the cost structure or on revenue flows. The analysis of BM's for industries can also be seen as a form of categorization as for example Desyllas and Sako (2013) for the car industry, Sorescu, Frambach, Singh, Rangaswamy and Bridges (2011) for retailing or Barth, Ulvenblad and Ulvenblad (2017) for the agri-food sector.

Practice-Oriented Approaches

In practice-oriented approaches real world business cases are used as showcases or typical cases for a BM from a firm perspective. Therefore, this type of approach can be situated on the lowest-level of abstraction. For example, Aspara, Lamberg, Laukia and Tikkanen, (2013), analyse business models by taking NOKIA, who changed its business model between 1990 and 1996, as a successful example of how firms can transform their BM's. Chesbrough & Rosenbloom (2002) focus on value creation by examining the XEROX company BM and Landau, Karna & Sailer (2016) analyse business model

adaptation for emerging markets at the example of AutoLux, a German car manufacturer in India. All these examples have in common that they use inductive inference to come to their conclusions and their focus is mainly practical in nature and less concerned with generality or external validity as the number of cases, often only one case, is typically low.

2.2.2 Structural versus Dynamic perspective

Most BM and BMI approaches can be situated along two dimensions, namely a structuralist and dynamic one. Structuralist approaches typically focus on the architectural dimension of BM and BMI in their definition and conceptualization. Dubosson-Torbay, Osterwalder & Pigneur (2002) for example state that “a business model is nothing else than the architecture of a firm and its network of partners for creating, marketing and delivering value (...)” (p.7). Another example of this type of definition can be found in Timmers (1998), who defines it as “(...) an architecture for the product, service and information flows, including a description of the various business actors and their roles (...)” (p.4). This perspective emerged from authors that combined strategic management approaches with organization design (Andreini & Bettinelli, 2017, p.34) They are not necessarily static in nature, but they put less emphasis on the dynamic element of BM and focus more on its structure. These approaches tend to decompose the concept into various levels of abstraction and conceive BM as a set of different components. (see George & Bock, 2011, Morris, Schindehutte & Allen, 2005, Winter & Szulanski, 2001)

As compared to the structural perspective, the dynamic approaches go one step further. They do not deny the architectural nature of the BM concept as outlined above, however they complement it by a stronger focus on the interconnectedness and evolution of the different components (Amit & Zott, 2012, p.46) such as a firm’s resources, activities, processes, competences, organization and value proposition (Demil & Lecocq, 2010, p.231). In their view, BM’s are not static; they are subject to constant “(...) refinement, adaptation, revision and reformulation” (Morris, Schindehutte & Allen, 2005, p.733). In addition, those approaches often take the choices or transactions as the basic unit of analysis; the so-called activity system perspective (Zott & Amit, 2010, p.216). In other words, the constitutive element of a firm is less defined by its organizational structure, but rather conceived as a network of transactions, processes or a set of choices, which in turn determines a firm’s logic (Amit & Zott, 2001, p.511, Casadeus-Masanell & Ricart, 2010, p.196-197).

2.2.3 The importance of the environment

The different definitions and approaches do not only differ with respect to the structural versus dynamic dimension of the concept but also with respect to the weight they assign to what lies outside the firm; the external dimension and the way they include it into their models. One of the most cited components of BM is customer value and how to create and capture it. Although this element is external in nature as value is not only defined by the firm but primarily by the customer, little attention is drawn to the highly contextual nature of value creation. Customer value is not only defined by the firm's own value proposition but also by the innovations and propositions made by others. A firm is always embedded in a system of interdependent innovations, which means that a given innovation never stands for itself, it always depends on accompanying external changes in the firm's environment (Adner, 2006, p.1). Frow et al. (2014, p.12) also advocate for a more integrative view on value creation by taking an ecosystem perspective, which is defined as a network of interdependent actors, their adaptation and evolution. In this view, value is always co-created, as a result of interactive and discursive action in the market place between customers, firms and their respective networks, which for their part are influenced by their roles, expectations and contexts (Lusch & Vargo, 2006, p.284-285, Chandler & Vargo, 2011, p.38, Edvardsson, Tronvoll & Gruber, 2011, p.332-333, 336, Andreini & Bettinelli, 2017, p.33).

Most existing business model definitions are rather inward looking, focusing on the firm and its resources, activities and processes. These approaches often neglect that firms are embedded in a complex network of other firms, industries, institutions and even cultures. These contextual factors do not only define the firm's role within the market and its self-conception, but also its competitive advantage. Adner & Kapoor (2010, p.320-327) for example found a statistically significant negative relationship between a firm's competitive advantage, operationalized as the market share difference between the leader and the follower and the ecosystem challenges they face, operationalized as technological challenges within a market. It needs to be said, that Adner & Kapoor (2010) do not make an analysis for Business Models in general. Their analysis mainly focuses on value creation and innovation. However, as these are forming an integral part of almost every BM conception, as will be outlined further below, the conclusion can be drawn, that at least partially the environment matters and it is worth considering it.

The work of Adner & Kapoor (2010) is typical for the BM literature. There have been different attempts to include the environment into the model on the component level but there is a considerable lack on the general concept level and in cases where the environment is brought in, it is rather used as a tool or perspective than forming integral part of the concept itself (e.g. Weiller & Neely, 2013).

2.3 BM definition for this thesis

In light of the different definitions and approaches seen in the last chapter, this chapter will provide the appropriate definition for this case with respect to the above introduced categories, such as the level of abstraction, the structural-dynamic dimension and the environment.

First, concerning the level of abstraction it needs to be said that this thesis follows a very practice-oriented approach as it analyses the case of one company (ENNOS) in one market (Colombia). Therefore, a suitable definition should be sufficiently narrow and clear as to fit this level of abstraction (see chapter 3).

Second, the principal aim and contribution of this thesis is to provide insights into how this company can adapt its business model as to be fit for a developing countries' market. Consequently, the definition should also fit the requirement of leaving sufficient room for a dynamic approach to BM. This is also due to the particular nature of developing countries' markets. Those markets are rapidly changing (Mahajan & Banga, 2006, p.25) and characterized by high degrees of uncertainty and risks, which makes adaptation and flexibility not only important but essential for survival. The BM definition should acknowledge this.

Third, as we have seen, the BM literature has a considerable lack concerning the inclusion of the external environment into its models and where it is done, it is done very selectively. There are no comprehensive frameworks in the literature that include the environment in the broader sense of its definition. Although it is beyond the scope of this thesis to provide an entire framework, its theoretical contribution is at least to take a clearly outward-looking view on all levels and components of the BM definition and provide ground for future research on this topic. A focus on the external dimension has not only theoretical relevance but also a practical one, again closely related to the special nature of developing countries' markets. In developing countries typically, a large share of the population depends on the informal economy with considerable effects not only on the labour market but also the society in general (Blades, Ferreira & Lugo, 2011, p.1). Informality refers to all types of economic activities that are not regulated or controlled by societal institutions (Pratap & Quintin, 2006, p.5). A high share of informality does not only affect firms in the informal sector but also firms in the formal sector as they affect wages, taxes and government interventions. This supports the fact, that a firm should not only know the formal rules of a market but also the informal ones and knowing these is crucial for its success. Therefore, the definition of this thesis will put special consideration on the environment a firm faces in a developing country.

The definition that fulfils these requirements established above is provided by Amit & Zott (2001) who state that:

“A business model depicts the design of transaction content, structure, and governance so as to create value through the exploitation of business opportunities” (p.511).

In a more recent publication they complement it by adding that:

“A business model elucidates how an organization is linked to external stakeholders, and how it engages in economic exchanges with them to create value for all exchange partners” (Zott & Amit, 2007, p.181).

This definition fulfils all requirements for a dynamic, outward-looking and practice oriented approach. By taking transactions as the basic unit of analysis and their governance to seize business opportunities in the definition, there is an underlying assumption of an evolutionary process. Business opportunities change and governance structures are typically designed for dealing with these rapidly changing complex situations. This does not only force us to take a dynamic perspective but also helps us to better describe the interactions between the firm and its external dimension, as dynamic approaches are more suitable for the inclusion of the external environment and the respective changes in it (Andreini & Bettinelli, 2017, p.39, Zajac, Kraatz & Bresser, 2000, p.429).

This leads to the last requirement, which is a stronger focus on the external environment of the firm. This can be found in the second part of the definition, which explicitly includes external stakeholders. In order to delimit the scope of this analysis, it is important to define what is meant by external stakeholders. Here we will depart a little from Zott & Amit's (2007) definition, who understand stakeholders only as the firm and its customers, suppliers and other exchange partners (p.183). We will advocate for a broader definition of stakeholder following the stakeholder model of Donaldson & Preston (1995) who define stakeholders as all types of “persons or groups with legitimate interests participating in an enterprise (...)” (p.68). Besides the customers, employees and suppliers this definition also includes investors, governments, political groups, communities and trade associations as stakeholders (Donaldson & Preston, 1995, p.68).

2.4 Business model generation model

In this chapter the most important components of a business model will be outlined. It will include the key activities, partners and resources, the customer segments and relationships, the value propositions, distribution and marketing channels, the market environment and the cost and revenue streams. It needs to be said that this model is not conclusive as it is a result of the choice made by the author focusing on the elements that are expected to be particularly important for the case. In addition, they have also been chosen with respect to their relevance for customer segmentation, as this will be the core of this thesis.

2.4.1 *Key resources, activities and partnerships*

Key resources refer to a firm's assets, which are a key requirement for delivering value. There can be tangible, intangible or human resources. Tangible resources include the financial resources and physical assets of a company (Grant, 2010, p.128) such as factories, offices, equipment and cash reserves. Intangible resources include patents, copyrights, reputation, exclusivity rights, knowledge, information etc. (Barney, 1991, p.101, Afuah & Tucci, 2003, p.43, Dubosson-Torrey, Osterwalder & Pigneur, 2002, p.10) Finally, human resources are primarily the company's employees (Grant, 2010, p.130) and their skills and knowledge (Afuah & Tucci, 2003, p.43). All these resources are insofar relevant as they define a firm's core competencies and through these, its competitive advantage. (Morris, Schindehutte & Allen, 2005, p.730, Barney, 1991). According to Demil & Lecocq (2010, p.230) resources can enable to seize new business opportunities and develop new products and services. They are therefore embedded in the different BM components, especially in enlarging a company's value proposition. In other words, in this context the value proposition can also be conceived as the mechanism through which resources produce sustained competitive advantage.

Key activities involve the most important processes and transactions that make a business model work (Osterwalder, Pigneur, & Clark, 2010, p.37). As it is the case for resources, it is a precondition for value creation and therefore for competitive advantage. To use the analogy of a machine: when the resources of a firm are its hardware or basic structure and components, the key activities are its mode of operation or the way the different hardware components are related to each other (Casadesu-Masanell & Ricart, 2010, p.197). In this thesis there will be a stronger focus on key activities than on resources. As resources can be conceived as the basic structure, they are often quite rigid (Doz & Kosonen, 2010, p.378), which makes it difficult to change them rapidly. As already outlined in the previous chapter an activity-based perspective can better capture and reflect the fast-moving and changing nature of developing countries' markets. In such a business environment a company can rapidly lose its competitive advantage. However, it is more appropriate to focus on already existing

competencies and capabilities than to change its very structure completely, although this might also be necessary at some point. (Aspara, Lamberg, Laukia & Tikkanen, 2011, p.622-623)

A firm's key activities can be divided into three main models. First, a production model, frequently found in manufacturing, which relates to designing, making, delivering and development of a product. Second, a model focusing on problem solving, whose principal aim is to find appropriate solutions to specific customer problems. These models typically focus on activities such as planning, training and service. Finally, a platform based model, which is based on key activities in relation with a platform or network e.g. networks, matchmaking platforms, software or branding. (Osterwalder, Pigneur, & Clark, 2010, p.37, Johnson, Christensen & Kagermann, 2008, p.53) For innovations to succeed key processes should be designed as to incorporate innovations on a broad basis, therefore they need to be replicable and scalable. (Gronum, Steen & Verreynne, 2016, p.591, Johnson, Christensen & Kagermann, 2008, p.53) Propositions in the empirical section of this thesis will also be analysed according to these three criteria.

Key partnerships are interorganizational connections with strategic importance. They include strategic alliances, joint ventures and buyer-supplier relationships or other forms of ties. (Gulati, Nohria & Zaheer, 2000, p.203) They can take various functions such as increasing the efficiency of a value chain by producing economies of scale, economies of scope, reducing risks and uncertainty (Doz & Hamel, 1998, p.5, Osterwalder, Pigneur, & Clark, 2010, p.39), facilitating access to new markets, reducing time to market a product (Kogut, 2000, p.419, 423), increasing the possibilities of value creation (Gulati, 1998, p.304), facilitating access to market information and intelligence (Gulati, Nohria & Zaheer, 2000, p.203, Doz & Hamel, 1998, p.5), helping to acquire important resources and execute specific activities (Osterwalder, Pigneur, & Clark, 2010, p.39) and finally improving business performance. (Bouncken & Fredrich, 2016, p.3584)

For a partner network to be successful a number of rules need to be implemented and trust has to be built over time. It is a considerable challenge for every firm to manage its strategic partnerships, especially as the network is growing larger. There are questions that need to be settled when building up a new partnership such as: Which function in the value chain does every partner have? Which elements of the value proposition is it responsible for? How can we build trust? What type of information should be exchanged? How will it deal with conflicts? And much more. (Doz & Hamel, 1998, p.8-9) In the empirical section of this thesis these questions will be addressed.

2.4.2 Customer segments and relationships

Customers are the core of every business model and an appropriate segmentation strategy is key to exploit full potential of the market and the customer base. Customer segmentation refers to a categorization of a large heterogeneous group of current and potential clients into smaller more homogenous groups according to their common needs, behaviours or attitudes (Osterwalder, Pigneur, & Clark, 2010, p.20). The primary objective of any segmentation is to define the users to whom a company's offer promises to be of most value (Chesbrough, 2007, p.13). This helps to prioritise and focus on the most important competencies, target the right customers and improve the value proposition (McDonald & Dunbar, 2004, p.16). There is an indefinite number of possibilities to segment the customer base. Osterwalder, Pigneur, & Clark (2010, p.21) for example differentiate between mass market, niche markets, segmented markets, diversified markets and multi-sided markets. These are only examples, which are nowhere conclusive. What is important is that there are many different methods and approaches to segmentation. For the empirical section of this thesis, the framework provided by Windler, Jüttner, Michel, Maklan & Macdonald (2017) will be used. It stands out for its comprehensiveness as it is based on a meta-analysis of all the relevant literature in this field. Windler et al. (2017, p.174-176) groups the relevant variables for customer segmentation into seven categories, three of which we will use for the analysis:

First, the customer's paying and investment behaviour. This category does not only include a customer's practice for paying, but above all the customer's willingness and ability to invest in the business relationship and the future. It also includes the customers' revenue and cost structure, as it highly affects his behaviour.

Second, a customer's competency as a value co-creator. Value-co-creation is a rather new concept and has gained considerable ground in the recent years. As Demil, Lecocq et al. (2015, p.5) note, customers are no longer passive recipients of a service or product as they have become increasingly involved in the process of value creation. This is even more so for the case analysed below, where customer segmentation and relationships will be analysed in the context of supplier-buyer relationships. As typically often found in the industry sector, the main direct customers of ENNOS are not necessarily the end-users, but often wholesalers or retailers¹. This type of customer relationship differs from direct end-user relationships in the way, that there is a set of preconditions that need to be met to be eligible as a customer such as expertise, a shared vision, operational efficiency, flexibility, willingness to innovate etc. (Dunn & Thomas, 1994, p.35-37). The reason for this is that the customer, within the

¹ It needs to be said that in this context it may become difficult to distinguish between a strategic partner and a customer. In the case of ENNOS, strategic partners can also be customers depending on their function within the value chain.

value chain, is at least as important for value creation as the supplier. Although this may apply to all customers, since every customer needs at least some knowledge to use a product properly to benefit fully from an offering, it is more pronounced in the case of supplier-buyer relationships.

The third category is the customer's attitude towards the business relationship. This category includes elements such as long-term orientation, activities to build up trust, commitment, transparency and information flow. For the case analysed below, it is key to have a long-term perspective when thinking about customer relationships. The reason behind this, is that only in a long-term relationship the company is able to monetize its core competencies. As Webster (1992, p.7) notes, in long-term buyer-seller relationships prices are less determined by market forces as mutual dependence leads to an increase in the importance of quality, delivery and technical support. In other words, when a company's competitive edge lies in precisely these competencies, it is more appropriate to focus on building up long term customer relationships, as these competencies become more important over time. The second element, which are the activities to build up trust and commitment, are preconditions to achieve long lasting relationships. Finally, transparency as well as an efficient information flow helps to identify interrelationships between different solution offerings, to better understand customers' needs and customize the value proposition (Tuli, Kohli & Bharadwaj, 2007, p.9, Murthi & Sarkar, 2003, p.1344-1345, Dubosson-Torbay, Osterwalder & Pigneur, 2002, p.8).

Once customer segments have been defined, managing those relationships becomes the most salient factor. The basic question is about how to serve customers to create added value and by which means to reach the targeted customer segments (Dubosson-Torbay, Osterwalder & Pigneur, 2002, p.9).

Customer relationship management is more than a one-time delivery of a product; it is an ongoing project between the supplier and the buyer. The relationship dimension is highly contingent on the service dimension of a value proposition. In the case analysed below, it includes the service at the moment of installation (deployment support) and after sales service (post-deployment support). At the deployment stage the focus lies on the delivery of the product and its installation in the client's environment. At this stage often, new needs and requirements can be identified, which call for modification and adaptation. Moreover, at this stage a profound understanding of the clients' personal capabilities and knowledge is crucial to maximize the utility of a solution. The second stage, post-deployment support, not only includes the provision of spare parts, routine maintenance and provision of operating information but also the launch of new products and the solicitation of feedback information, in response to the changing necessities and demands of a company's clients. (Tuli, Kohli & Bharadwaj, 2007, p.7-8) Post-deployment support therefore also requires a well-functioning and elaborated feedback and monitoring system.

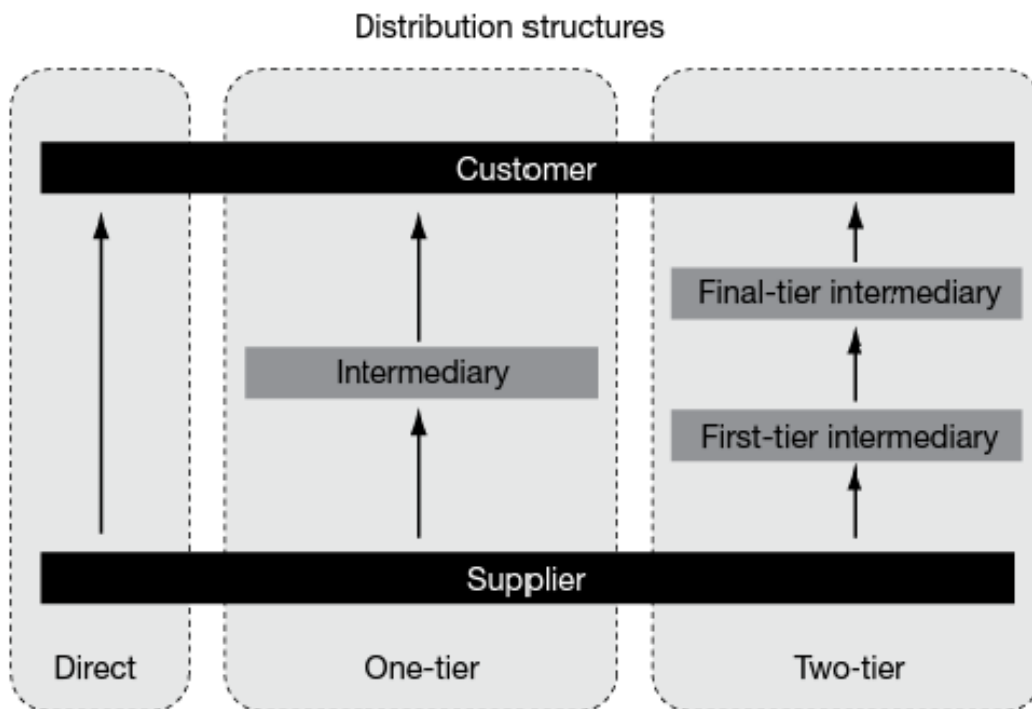
2.4.3 Distribution and marketing channels

Distribution and marketing channels entail the delivery of a product or service and communication of its value to the customer. In other words, this BM component includes all elements that connect a company and its value proposition to the end customer. The customers can either be reached through channels owned by the company itself or through channels from a partner network. A mix of both is also possible. (Osterwalder, Pigneur, & Clark, 2010, p.26-27) Company owned channels can either be direct, by for example using sales agents directly selling to the customer, or indirect using an intermediary organization. Channels using a partner network are indirect by definition.

Direct channels have evolved in the recent years, especially with the emergence of the internet; as internet platforms enable online direct distribution. The advantages of such a channel are its low costs, higher margins and the possibility to collect valuable insights from the customers directly. In addition, direct interaction allows for adjustment of prices and promotional activities immediately. (Dent, 2011, p.11)

According to Dent (2011, p.11-13), indirect channels can be one-tier, two-tier or include multiple tiered distribution (see figure 1). The advantages of these types of channels is facilitated access to new customers or customer segments, simplified entrance into new markets and leveraging of the investments made as intermediaries have their own sales network, infrastructure and sales force. The disadvantage are reduced margins, as a supplier must accord a reasonable margin to the intermediary and a higher risk of dilution, as intermediaries often typically sell many brands, potentially including products from direct competitors. (Dent, 2011, p.12-13)

Two- and multiple tiered distribution channels have the same benefits and drawbacks as a one-tier system, however often more pronounced, as they include several layers. The inclusion of more than one layer depends on the type of products and markets a company is operating in. In markets, where a product should reach as many potential customers as possible in a big geographical area with potentially thousands of intermediaries, the costs of handling a business relationship with each of them, are much too high as compared its potential returns. This effect is even further accentuated if a product is rather designed to have low sales volumes per intermediary. In such a situation a two-tiered or multiple tiered channel structure is more appropriate. Typically, multiple tiered channels are found in markets with complex geographical, topographical or economic conditions such as emerging markets. In China it is for example not unusual to have a five or six-tier distribution. (Dent, 2011, p.13)

Figure 1: Typical distribution structure

Source: Dent, 2011, p.12

Whether distribution should be company owned or use strategic partners depends on many factors, such as the product, the suppliers core competencies and market intelligence, the market environment and the industry. The competencies of a partner can positively affect a company's value proposition and as seen in chapter 2.4.1, it can even be a source of innovation. In turn, company owned channels have more potential to yield higher returns, but can also prove to be very costly. It is important to find the right distribution channel strategy with respect to the market and industry a company is operating in and the customers' needs. (Osterwalder, A., Pigneur, Y. & Clark, T., 2010, p.26-27)

Once a company has decided, which channels to use, the design of those, has to be established with respect to the different phases of channel construction. They can be categorized as follows: 1. raising awareness about the product and the value proposition 2. the implementation of feedback mechanisms 3. the effective purchase of the product 4. the delivery of the product and service and finally the service that will be provided after a product has been sold. A proper channel design needs to consider all these elements. (Osterwalder, A., Pigneur, Y. & Clark, T., 2010, p.27) In the empirical section of this thesis, a proposition will be made on how ENNOS can support its partners on all these phases.

2.4.4 Cost structure and revenue streams

Revenue defines the capacity of a firm to turn its value proposition into money (Mahadevan, 2000, p.62, Dubosson-Torbay, Osterwalder & Pigneur, 2002, p.11). There are two possible ways to approach the design of a revenue structure. One way is to take a consumer value perspective by first evaluating whether an idea, product or service generates enough value for the end-user and then transferring it into a revenue model, which defines why, how, and when the enterprise receives earnings for the sold products or services. (Linder & Cantrell, 2000, p.5, Gordjin, 2002, p.183, Petrovic, Kittl & Teksten, 2001, p.3) However, in many markets this might not prove to be successful, as it leaves out the market or technological conditions of a specific country. In other words, value could prove to be less than expected when moving from a set of conditions in one market to another. In these cases, it is more appropriate to take an enterprise perspective and begin with revenue structure by defining a products value proposition in terms of potential revenue it might generate (Chesbrough and Rosenbloom, 2002, p.530, Gordjin, 2002, p.183). Besides its function of determining a BM's sustainability and economic value (Stähler, 2002, p.6), the introduction of a revenue model is also an important source of feedback from the market. It rests on assumptions about market profitability at the moment of entering a new market and gives important information about whether a BM works by the time of reaching maturity. It is the basis of an ongoing cyclical feedback process for improving a company's BM. (Magretta, 2002, p.89-90)

Basically, revenue streams can be divided into one-time transactions (e.g. asset sales) and recurring transactions (e.g. subscription fee) or a combination of both (Osterwalder, A., Pigneur, Y. & Clark, T., 2010, p.30). Revenue streams can take many forms, from simply selling a product, over subscription fees, advertising and sponsoring to commissions and transaction cuts (Chesbrough & Rosenbloom, 2002, p.534, Dubosson-Torbay, Osterwalder & Pigneur, 2002, p.11). While defining its value proposition for its customer segments, a company should consider different potential sources of revenue, as revenue can be generated on various levels of the value chain (Afuah & Tucci, 2003, p.53).

The cost structure in turn defines all expenses incurred to create value for a firm's customers and includes all costs for operating a certain BM (Dubosson-Torbay, Osterwalder & Pigneur, 2002, p.11). All costs can be divided into two main categories: fixed costs and variable costs. Fixed costs such as salaries, rents and manufacturing facilities do not change with the quantity produced whereas variable costs such as raw material, change with respect to the output. Costs can be associated to value delivery, distribution, customer relationship management and the creation of value. (Osterwalder, A., Pigneur, Y. & Clark, T., 2010, p.41)

Concerning the cost structure in the context of BM's, there are mainly two mechanisms that need particular attention: economies of scale and economies of scope. Economies of scale are cost reductions in the costs per unit of output produced due to the decreasing share of fixed costs per unit as the quantity of output increases. In turn, economies of scope have positive effects on both, fixed as well as variable costs. Typically, they can be attributed to productivity increases or efficiency gains from one product category to another product, for example through learning effects. In the empirical section of this thesis these effects will be shown on the example of the costs for the importation of the product.

Finally, it is important to note that it is not only important to understand a company's own revenue and cost structure but also the structure of a company's partners and competitors, as a BM should also be designed to appropriately generate enough revenue and minimize costs for the firm's strategic partners.

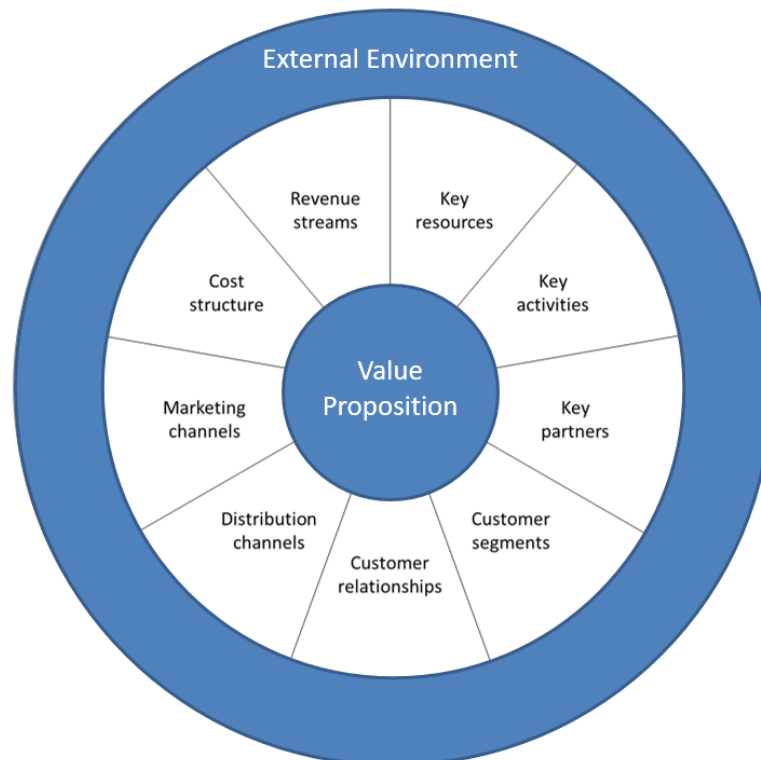
Ultimately, the difference between the revenue side and the cost side is the company's profit. Profitability is the basic unit of analysis when comparing across firms, industries and markets. It is also an indicator for the competitive pressure a company faces. (Afuah & Tucci, 2003, p.53)

2.4.5 Value proposition

The value proposition is the central element in any Business Model and is the core of the BM definition of this thesis (see chapter 1). According to Osterwalder, Pigneur, & Clark (2010, p.22) it constitutes the linking element between a company's products and services and the needs of customer segments. The value proposition either solves a problem or satisfies a need for a defined customer segment. It is important to note that a product or offering does never embody a value in itself. Value is always defined by the customer or customer segment, as every customer may value different attributes of a product or service (Chesbrough & Rosenbloom, 2002, p.534). A product can create value through its innovativeness, providing a better performance, being tailored for specific customers or segments, having a superior design or by offering similar value as other products but to a lower price (Osterwalder, Pigneur, & Clark, 2010, p.23-24). There is a plethora of possibilities and attributes that can be part of a firm's value proposition and the concept is a tool to help find it and define an appropriate strategy for markets and customer segments. This is also the main question this thesis will try to answer in the empirical section. In other words, the value proposition works as a type of glue between a firm's strategy and the market or external environment it is embedded in and in the best case, the strategy consistently follows from a firm's value proposition.

All components outlined in this chapter form part of a firm's value proposition (see figure 2). Key resources, activities and partnerships define a firm's core competencies and therefore form the basis of a firm's value proposition. The customer segments and relationships are the main objective of a value proposition. Customers are the ultimate judges, who define how much value they attribute to a firm's offering. Distribution and marketing channels define the way on how to reach customers. Finally, the cost and revenue structure defines how a firm's value proposition can be turned into money.

Figure 2: Value proposition and its components



Source: Own representation based on Abdelkafi, Makhotin & Posselt 2013, p.12

Having written a lot about value and its creation, it is time to define what value really is and how it can be measured. Porter defines value as “the amount buyers are willing to pay for what a firm provides them. Value is measured by total revenue (...) A firm is profitable if the value it commands exceeds the costs involved in creating the product” (Porter, 1985, p.38 as cited in Amit & Zott, 2001, p.496). For this thesis however, there are several problems with this definition. Let us start with profitability. Profitability surely can be an indicator for value, but is it a sufficiently precise way to estimate it? There are strong reasons to be doubtful. First, costs are company specific and have therefore no connection to the customers valuating a service. Whether a company works efficiently is much more related to its internal processes than its value proposition. It is far from obvious that higher costs automatically lead to a better value proposition, as firms typically operate very differently. Second, the revenue at first sight may appear to be a better indicator, as it seems to reflect at least to some extent the value

customers attribute to a certain product, otherwise they would not be buying it. However, this view leaves out an important aspect of revenue creation, namely prices. A company has to fix a certain price and enforce it for a specific market and/or customer segment. Though, there might be customers valuing the product much higher than the price set by the company. In this context a much better indicator would be a customer's willingness to pay as it better reflects each customer's willingness to spend a share of its income for the product. This is also the measure for value that Porter suggests. Although it has proved to be a very valuable concept, it is less appropriate for the research question of this thesis, mainly for some practical reasons. First, it is very difficult to measure each customer's willingness to pay for a product. Asking every customer how much he would pay for a product is very costly and even when there is a response, one can never be sure, whether it really reflects the client's real preferences. A customer's purchasing behaviour is too complex to be answered by a simple question positing a hypothetical situation. The customer's situation, his purchasing power, his needs, tastes and knowledge about other products are all variables that cannot be captured by the simple willingness to pay, but are all highly relevant when a person chooses to finally buy a product. Second, even if we were able to come up with a specific number about the client's willingness to pay, only little can be concluded out of this information. It might be very helpful when it comes to pricing, but performs very badly when it comes to defining a strategy for a specific market. The willingness to pay does neither tell us what elements of a value proposition a customer is willing to pay for, nor does it tell us something about why a customer values a product. The same product can be valued very differently although clients put the same price tag on it. It is crucial to understand the reasons behind a customer's choice when trying to find out the appropriate strategy. The research question of this thesis does not stop at a simple description; its aim is to propose a new and refined strategy for a new market and a new customer base. Therefore, it is not enough to simply come up with a number, as this will only barely be able to explain how and why a company should enter a market. For all these reasons, the approach of this thesis is a mainly qualitative one. The author has led many conversations with different people, not only asking about their willingness to pay for the product but much more speaking about their situations, lives and problems. This will form the empirical basis for the subsequent analysis.

2.4.6 External environment

So far, one element of figure 2 has been left out, namely the external environment. As already outlined in chapter 2.2.3, it is however an integral part of the BM definition and will find special consideration within this thesis. In the empirical section the external environment will be operationalized as external stakeholders, who are in turn divided into two categories: First, stakeholders that have a direct link with the firm such as customers, employees, suppliers and strategic partners. Second, external stakeholders with indirect connections to the firm such as governments, political groups, communities and trade associations.

The explicit inclusion of the external dimension into the BM model is important to be able to include transition dynamics into the model. As societies, markets and institutions transform over time, it is primordial for a company to be able to adapt its BM to these changing conditions, to avoid the erosion of its competitive advantage and achieve sustainable growth levels (Loorbach & Wijsman, 2013, p.20). As already mentioned in chapter 2.2.3 it is even more important for developing countries' markets as these markets typically undergo considerable transitions. Unfortunately, in the BM literature only little attention has been drawn to transition dynamics (Boons, Montalvo, Quist & Wagner, 2013, p.4), a gap this thesis is trying to respond to. In the recent past there have been some attempts to raise more attention to transition in the context of BM (see Bidom & Knab, 2018, Bolton & Hannon, 2016, Huijben, Verbong & Podoyntsyna, 2016, Sarasini & Linder, in press, Tongur & Engwall, 2014), nevertheless this field still remains highly underexplored.

The external environment influences all components of a Business Model and all stages of a value chain through a plethora of different mechanisms such as actor networks (Chandler & Vargo, 2011 p.39-40), regulatory regimes (Huijben, Verbong & Podoyntsyna, 2016), institutions (Hannon, Foxon & Gale, 2013), technological developments and challenges (Bidmon & Knab, 2018, Adner & Kapoor, 2010) and transformation of markets (Schaltegger, Lüdeke-Freund & Hansen). All these components of the external environment affect the company's position within the market and in a broader sense in society. This in turn affects the strategic choices a firm can make. In the empirical section of this thesis the focus will be on institutions, markets and regulatory regimes as main variables influencing the firm's choices. The particular nature of these elements in Colombia, as we will be concluded in the subsequent chapter, highly affects the cost and revenue structure, the key partners to choose, the activities to focus on and the distribution channels to select. The ability to integrate these insights into its business model, will prove to be crucial for the company's success within this market.

3. Empirical findings

On the basis of the general business model generation model introduced above, the empirical section of this thesis will capture the Business Model of ENNOS and propose a tailored business model for Colombia. The empirical basis is grounded on the authors field work during several months (between October 2017 and March 2018) in Colombia. It is also based on the author's experience of living one and a half year in Colombia. In the first section of this chapter an overview over ENNOS' actual Business Model will be given, based on the numerous encounters with ENNOS' management and also the visit of ENNOS' CEO in Colombia. However, also this section is already tailored to the Colombian market and should not be read as a universal business model. Having recently started with commercialization, ENNOS has not defined a universal business model yet. In fact, the way ENNOS is doing business often follows the logic of the specific country it wants to enter, which makes it difficult to define a universal business model. This is consistent with Nenonen & Storbacka's (2010, p.54) conclusion that also multiple business models may exist within a single firm. The basic question here is, which elements of a business can be seen to be universal as they are only hardly affected by each country's specificities and which elements need to be adapted. As the title of this thesis suggests, one main finding is, that in particular the value perceived by customers of a company's value proposition varies between countries. This in turn affects the target customer segment and therefore the related marketing strategy. This will above all be the mayor issue addressed in the second section of this chapter.

3.1 Introduction to ENNOS and its Sunlight Pump

3.1.1 *The company*

ENNOS is a Swiss privately-owned company that grew out of the Berne University for Applied Sciences. This company developed a Solar water pump for smallholder irrigation and domestic water supply in developing countries. In 2016 the pump came to market maturity, which marked a new era for the firm as it entered a transition stage from a pure focus on research and development to commercialization. Research and development still remains one of the core activities of the firm, as they are developing new pump types. However, commercialization and the necessity to achieve financial sustainability, has become a more salient and important issue for the company. Since its foundation in 2006 the company was mainly engaged in research and development. The step towards commercialization marks a milestone in the company's history and is the biggest challenge the company is facing right now.

3.1.2 The ENNOS sunlight pump

The ENNOS sunlight pump is a portable, highly efficient solar water pump. It can pump water up to 40 meters in height and has a maximum suction depth of 7 meters. The maximum amount of water that can pump is around 16'200 litres a day. (Jeanneret, 2017, p.9) The pump differentiates from existing products in many ways. First, by its efficiency. Efficiency in this context means that with a minimum of input, in this case “energy” a maximum of output “water”, can be elevated. A comparison of the sunlight pump with the SQF1-8 Grundfos² pump, a pump similar in size, shows that the sunlight pump achieves higher discharge rates on all input levels. In other words, the sunlight pump achieves high discharge levels with a minimum of energy. This in turn also reduces costs, as fewer PV panels are needed to make an application work in comparison to other pumps. Second, its innovative electronics. In most cases solar water pumps are only operational if connected to a solar inverter that turns a PV panel’s variable direct current (DC) into alternating current (AC). In the case of the sunlight pump, the PV panels can directly be connected to the pump and the all electronics are directly incorporated within the pump. Besides its function of turning DC current into AC current it has the function of protecting the pump. It constantly receives information from the pump and reacts accordingly. It protects the pump from being damaged. Moreover, electronics also fulfil the function of collecting data. It constantly measures water flow, energy and detects if there are any problems. It is also equipped with maximum power point tracking technology, allowing for maximally efficient transmission of energy to the motor. Finally, electronics also include a Bluetooth interface to connect a Smartphone device to the pump. By downloading the ENNOS application, the pump can be operated remotely and important technical historical data can be read such as water flow, produced energy, temperature and speed.

3.2 ENNOS’ actual Business Model

3.2.1 Key resources, partnerships and activities

ENNOS’ key resources are human capital and reputation. Human capital refers to the fact that through its proximity to a university it has access to a pool of highly qualified and trained people. The company’s founders involve professors from the best universities of the country, which are acknowledged experts within their respective fields. There is an expert for electric motors, an expert for pumping systems and an expert in market-based approaches to poverty reduction (Jeanneret, 2017, p.9). In addition, through their occupations as university professors they have direct access to young talents from renowned universities. A second key resource is its reputation. First, ENNOS benefits from the reputation of the university it is connected to. The Berne University for Applied Sciences has an

² Grundfos is one of the leading pump producers worldwide

outstanding reputation worldwide in the field of renewable energy. It made its mark in the World solar challenge in Australia in 1990, where a Solar Energy Car, the “Spirit of Biel”, developed by this university won a race through the Australian outback on a distance of about 3000 km (Worldsolarchallenge, n.d.), prevailing against competitors such as Honda, Japan (2nd), University of Michigan, USA (3rd) and Hoxan, Japan (4th) (Aurorasolarcar, n.d.). Ever since, the university has retained and expanded its worldwide reputation in renewable energy. Now featuring an innovation park, the university has an excellent platform at its disposal to discuss the latest developments and findings from research with governments and private companies alike. ENNOS benefits from its proximity to the University and the innovation park by having direct access to the latest innovations and to the private sector, where it can get a feeling what companies are looking for. (Switzerland Innovation Park Biel/Bienne, 2017, p.4-6) Finally, ENNOS also benefits from being a Swiss company. The Swiss machinery industry is globally known for its high quality, precision and innovativeness. As we will see in chapter 3.3.1, this can also have some drawbacks.

ENNOS’ key partners can be divided into roughly two categories. First, the partner it has for the production of the pump. The solar water pump is produced by Jain Irrigation Ltd., an Indian company and second largest producer of micro-irrigation products worldwide. It has more than 10’000 employees and generates more than a billion USD of yearly revenue (Jains, n.d.). This partner allows ENNOS to produce the pump cost efficiently and to benefit from economies of scale. However, since commercialization has only started recently, this advantage has not yet played out completely. There is still potential for such economies.

The second category of partners refers to partners for the commercialization of the pump. As a Swiss start-up with a product designed for developing countries’ markets, ENNOS cannot build up distribution and marketing channels itself and therefore has to rely on local partners that fulfil that function within the supply chain. In addition, local partners are more acquainted with local conditions and culture. To be eligible as a partner several conditions must be met. First, a partner needs to have sufficient know-how to deal with the pump. More so, the product in itself is very easy in its use. However, its appropriate installation can be a challenge. There are various factors a technician has to take into account when installing the pump such as water requirement, radiation, water quality, depth of the well etc. Second, a partner should also be able to execute maintenance and repair to a certain extent and efficiently deal with warranty cases, depending on its function within the distribution and marketing channel. Third, a partner should have a sufficiently large distribution and sales network. This is important for ENNOS to keep costs under control and being able to benefit from economies of scale as fast as possible. A large pre-existing distribution and sales network also reduces time to market a product. Further criteria for partners can be seen in chapter 3.3.2, where two potential partners for Colombia will be analysed.

ENNOS is well aware of the necessities concerning local partners' know-how and has already developed a system and strategy to train them. It has created an extranet exclusively for sales partners, where all relevant technical information about the pump, maintenance, repair, marketing material and training documents can be found. In addition, the company is implementing a training system for distributors and local partners. This system should guarantee an appropriate level of know-how across all partners. The idea is to introduce a system of certificates with different degrees of difficulty or levels the partners and technicians can or have to obtain. These certificates attest that a partner has the ability and capacity to fulfil certain functions. With increasing levels of difficulty, the partner can start dealing with more complex problems and take over more responsibilities and activities. Partners with basic knowledge can only fulfil basic functions such as easy repair and installation. Partners obtaining higher certificates can also detect and deal with warranty cases and execute more complex repairs. Besides its function of guaranteeing a uniform level of know-how across partners and countries, it also fulfils the role of selection. Whether a partner is eligible as importer, wholesaler or retailer can be attached to the requirement of having certain certificates. It is reasonable that a wholesaler needs a higher level of know-how than a retailer or a technician. ENNOS can select partners by requiring the respective certificates the partner must acquire to take the role he wants within the distribution network. Finally, a partner should also have the financial capabilities necessary to invest in a new product. As a small start-up, ENNOS cannot afford to invest heavily into partnerships, which would also imply too much risk for ENNOS in case of payment fall outs.

Finally, Jain Irrigation Ltd., the producing partner also takes the function of a commercial partner in some markets. As seen in chapter 2.4.1, such strategic partnerships have the capacity to facilitate access to new markets, reduce time to market a product and increase the possibilities for value creation. Being already present 126 countries and with a history of over 34 years, this partner has considerable experience in the commercialization of irrigation systems in developing countries. Therefore, by having Jain Irrigation Ltd. also as a commercial partner, access to new markets can be facilitated considerably. It has the capacity to provide ENNOS with the possibility to position its product rapidly in different markets. With a large range of complementary products, it also provides considerable potential for value creation, as it has the capacity to provide comprehensive and tailored solution offerings to customers. However, having such a big partner also involves some risks. First, ENNOS may become too dependent on the partner and could lose room for manoeuvre. By ceding certain markets, the product will first and foremost become associated with the company Jain Irrigation Ltd. and not ENNOS, which could turn it increasingly difficult for ENNOS to commercialize the pump on its own. In addition, there might also be a risk for the independency of the firm concerning its research, as the partner's necessities may become an integral part of the partnership's conditions. In other words, it may also influence ENNOS' core activities. Second, by not commercializing the pump

itself, ENNOS loses a source of revenue, as the partner takes over a part of the margin. It is important to mention this, as it constitutes a strategic option for ENNOS to hand over certain markets to Jain irrigation Ltd. This is also a possible strategy for Colombia and other Latin American markets that will be analysed below.

Concerning the key activities, in chapter 2.4.1 three different models have been distinguished: A production model, a problem-solving model and a platform model. ENNOS' activities include elements from all three of them. ENNOS' core activities lie in research and development. The company was founded in 2006 to develop a new type of pump run by solar energy. This type of activity is part of the production model. However, the central element of the production model, manufacturing, has been outsourced by ENNOS', because manufacturing is done by its production partner in India. The problem-solving model can be seen from ENNOS' vision, which is:

The vision of ennos is to make the sunlight pump physically and financially accessible to many people in developing countries and to contribute to an improvement of their income and living conditions. Furthermore, ennos wants to support the establishment of a local renewable energy sector and it wants to create jobs and value. (Ennos, n.d.)

The problems ENNOS is trying to tackle are poverty reduction, improvement of living conditions, unemployment and the reduction of CO2 emissions. Besides these very general goals, ENNOS also has answers to very specific customer problems, these will be addressed in the subsequent chapters, where ENNOS' value proposition and customer segmentation will be analysed.

The platform model also forms part of ENNOS' BM. As already outlined above, ENNOS has an extranet tailored for its partners, where all relevant technical information as well as marketing material can be found. Moreover, ENNOS has developed an interactive tool, called "Configurator", where customers can type in their conditions on the spot such as geography, depth of the well, distance, radiation, water requirement etc. and the tool calculates the most efficient application with respect to PV panel size and tube diameter. (Ennos, n.d.) Whereas the Configurator tool is openly accessible to all, access to the extranet is restricted to partners only. However, no fee is charged. In other words, ENNOS does not use this platform to generate revenue, a strategy that might be interesting however and will be analysed below.

3.2.2 Customer segments and relationships

Customer segmentation is a key driver for success in every Business Model. The experiences made in Colombia have shown that one of the most important issues when entering into negotiations with potential partners, is the question about the customer segments for the pump, their size and their purchasing power. So far, ENNOS' main customer segments were small farmers in developing

countries, as the original idea was to design a pump for smallholder irrigation. Since then, ENNOS has identified new customer segments, which will be analysed in chapter 3.3.4. For now, the focus will be on small farmers. The analysis is done with respect to the framework of Windler, Jüttner, Michel, Maklan & Macdonald (2017, p.174-176) outlined in the theoretical section of this thesis (see chapter 2.4.2).

The first element of Windler, Jüttner, Michel, Maklan & Macdonald (2017, p.174-176) is customer paying and investment behaviour. Customers' paying and investment behaviour does highly differ in developing countries as compared to countries from the developed world. One of the most important aspects is the perception of time. Time has a completely different notion and function in these markets. Conditions and circumstances in these countries can change very rapidly. Colombia has been marked by a civil war for more than five decades and the conflict about land-ownership has still not been settled yet. A farmer, having to fear expropriation at any moment, has no interest to plan in the long run. This is also reflected in its paying and investment behaviour. Farmers in Colombia are very sceptical to invest in projects yielding returns only in the long run. They are rather seeking short run solutions to their daily problems. Paying behaviour does also follow this perspective. In Colombia, companies often insist on payment in advance (in most cases between 50%-100%) of the total value. Another reflection of Colombian payment practices are the high risks of fall-outs; these are reflected by the extremely high interest rates banks cover for short as well as long-term loans (Dinero, 2017). As has been defined in chapter 2.4.2, an important aspect of customers' paying and investment behaviour is their willingness and ability to invest in long-term relationships. It can be concluded that in the case of Colombia this willingness can be considered to be comparatively low.

The second category is a customer's competency as a value co-creator. In the theory to types of customer relationships are distinguished. One is the relationship with the end-user and the other is the relationship of ENNOS with its sales partners, which also form a type of customers for ENNOS. In both types of relationships, value-co-creation is an important factor and in both cases value is defined in terms of pre-existing knowledge and skills. For small farmers to be value-co-creators first an appropriate use of the product is key. The farmer needs to know the operational basics of the pump and how to use it, so as to benefit from the pump's entire lifespan. The ENNOS sunlight pump differentiates itself from competing products through its long lifespan. In order to turn this mainly technical value into real customer value a minimum of know-how is necessary e.g. the pump should be protected from the sun in order to avoid overheating and if water quality is bad, a separate well can pre-filter dirty water and help increasing the pump's life span. A small farmer, who uses the pump as recommended is more likely to benefit fully from its value and this in turn increases the likelihood of him becoming an ambassador of the product towards other farmers. In the best case, a farmer also knows how much he economizes in comparison to an electric or diesel pump. Although by only

knowing this, the objective result is the same, subjectively the pump will perceive to him of being of higher value, when he knows how much better off he is. This can also generate spill over effects to other farmers. Although ENNOS is not in direct contact with these end-users in a multiple-tiered distribution network for example, it has the possibility to influence this outcome by providing respective marketing material and include this element into its training programs. This leads to the second type of relationship, which is ENNOS' relationship with its sales partners. They are key for value creation. A customer will inevitably identify the pump's value with the person who sold this product to him and not with ENNOS in the first place. Service quality is therefore key. As already explained, ENNOS has put in place a training system. It is very important to note that besides the technical education, service and sales training it is at least as important in order to achieve long-term growth. Customers will only continue buying the pump, if the local partner proves to be able to transfer the value of the product into real customer value. This is particularly important for this type of product. In comparison to consumer goods for example, the service dimension plays a much more important role and constitutes a considerable share of ENNOS' value proposition. The solar water pump is a technology that requires a certain amount of interaction between the seller and the customer. The pump needs to be installed by a local supplier/ technician with respect to the customer's situation on the spot. The place where the pump will be installed needs to be visited and troubleshooting sometimes also requires a visit of a certified person. Moreover, customers often have inhibitions to tell the retailer when the pump is not working, which also requires visits to monitor whether the pumps are working correspondingly. All this supports the fact that the market ENNOS is operating in, is highly contingent on the customers' as well as retailers' competencies as value co-creators.

The third category introduced by Windler, Jüttner, Michel, Maklan & Macdonald (2017, p.174-176) is the customer's attitude towards the business relationship. As has been concluded in chapter 2.4.2, a company, whose competitive edge lies in a product's quality and the corresponding service, long-term and stable relationships are key. It is also in such a context that prices become less important. Although the pump is produced in India, its costs are still above average in comparison to some competing products. For example, a very popular and the most widely sold electric pump in Colombia from the company Barnes, is already available for 200'000 COP (approx. 66 USD³). If adjusted for its efficiency, close to zero operational costs and long lifespan however, the sunlight pump may still be competitive. Notwithstanding the question remains, whether the better quality and the differentiating functions compensate for the higher price in the first place and even more importantly, whether the targeted customer segments' purchasing power is sufficient to finance the pump as it requires a higher upfront investment. The focus on quality in combination with a higher upfront investment raises the question

³ The dollar amounts were estimated taking historical average exchange rates between USD and COP for the year 2017, which amounted to 2'962.26 COP for 1 USD according to www.investing.com.

whether small farmers are the right target customer segment for the pump in Colombia. Small farmers in Colombia are typically characterized by very low income. Concerning income structures in the rural area comprehensive data is missing. The most recent data analysis found for income in the agricultural sector in rural Colombia dates back to 2005 from the ECH survey of households conducted by DANE (Colombian National Administrative Department of Statistics). Based on this survey Garay, Barberi & Cardona (2009, p.81-83) calculated the average monthly income per small farm household in the rural agricultural sector which amounted to 278'280 COP (approx. 120 USD⁴), out of which 210'474 COP (approx. 90 USD) stem from pure agricultural income. The difference is explained by income generated in other sectors through secondary employment or other forms of rents.

In the context of supplier-buyer relationships the same questions apply as for direct end-user relationships. If a sales partner has small farmers as its main target customer segment, the sales strategy needs to reflect this by for example installing appropriate financing mechanisms to tackle the challenge of the higher up-front investment. In this context, innovative financial vehicles such as microfinance, impact investing or NGO's that take the role of a facilitator, are important to include in the strategy.

Concerning customer relationship in the theoretical part of this thesis (see chapter 2.4.2) deployment and post-deployment support have been distinguished. The deployment stage includes the first contact with a client. The primary objective of this first contact is to identify as accurate as possible the customer's specific needs, habits and practices. It forms an integral part to first identify what a customer really wants, before getting to the solution offering (see chapter 2.4.2). The same solution can be offered in many different ways, as it is in the salesperson's or technicians power to emphasize certain attributes of a solution. A highly price sensitive customer is not likely to react the same way than an emotional buyer, to the same arguments. It is crucial to acknowledge this and develop a sales strategy accordingly. This is especially important for a product such as the sunlight pump, whose value consists to a considerable extent of the provided service. Not only is it a technical necessity to interact with the end-user, but also a critical success factor for the commercialization. It is an innovative product, using novel technology, which may not be familiar to the customer base ENNOS is trying to reach. The high up-front investment causes uncertainties and the local partner needs to be capable to respond to the fears associated with these. A customer feeling understood and taken seriously is much more likely to buy the pump in the first place and by knowing that he has a partner that supports him and understands his needs, he is also much more likely to be satisfied and recommend the pump to his friends. The interviews led with small farmers support the fact that most people do not know this

⁴ The dollar amounts were estimated taking historical average exchange rates between USD and COP for the year 2005, which amounted to 2'321.52 COP for 1 USD according to www.investing.com.

type of technology. Some of them hardly know what a PV panel is. In the best case they have seen one in television. The sales strategy should acknowledge this. With the configurator tool, ENNOS has developed an excellent tool for local partners to effectively propose the technically most efficient application for the sunlight pump to the customer, however on the service dimension such a tool does not exist yet. In the next chapter a proposition will be made on how ENNOS may better support local sales partners to better respond to the customer and more effectively position the sunlight pump into their portfolios and value propositions.

Concerning post-deployment support or after sales service, the same parameters apply as for deployment support. For service quality and customer satisfaction regular visits to the end-customer would be preferable to guarantee the appropriate and efficient use of the pump and react to customer's needs and preferences. However, in the markets ENNOS is operating in, such visits usually involve high costs that cannot be covered. In the case of Colombia rural areas are very difficult to access due to its topography and the vast extension of the country. A technician of one of the potential partners for Colombia for example once went to a client in Vichada, a small village in the meta region near the Venezuelan border. The whole trip to this client took him two weeks, as it could only be accessed by boat. This example shows in an impressive way that sending a technician to the customer in such a remote place only to ensure that he is satisfied, is simply economically not viable. It would be hypothetically possible to charge the customer a fee for such visits. However, considering the purchasing power of a typical customer, this option is not viable either. In other words, there is an important trade-off between after sales service quality and economic considerations.

One of the most important elements of after sales service is feedback. Since the pump is equipped with electronics saving all relevant information that can easily be downloaded with a smartphone device, it offers a great opportunity to collect valuable market information from the field. Although it is in the local partner's interest to minimize visits to the customer from an economic point of view, should it nevertheless be necessary, an appropriate feedback mechanism needs to be at a technician's disposal. Besides the technical data that can be extracted from the pump, a technician may also collect further information during the conversation with the customer. Further in this chapter an example of a questionnaire for a technician will be provided. Every customer contact is a business opportunity and ENNOS' objective should be to support local partners and technicians to turn them into revenue.

3.2.3 Distribution and marketing channels

So far ENNOS has concentrated on two archetypes of distribution channels. First, a two-tiered distribution structure with wholesalers and retailers and an agency model. The term "archetypes" has been chosen deliberately, as ENNOS has used variations of these models in the different countries it is operating in. Closely related to the question about these two types of channels is the fundamental

question whether it is in the company's interest to build up a company-owned distribution structure or rather focus on strategic partnerships. In the case of a two-tiered or multiple-tiered distribution network it is clear, that this option constitutes a strategy focusing on strategic partnerships. In the case of an agency model, further differentiation is required as there exist different forms of agency models with different degrees of dependency or independence between the mother firm and the sales agent. In some models the agent presents himself on the market in the name of the mother firm, in this case ENNOS (e.g. commercial agent model) and in other cases he acts on his own behalf (e.g. commission agent model). Differences also persist in the cost and revenue structure. Whereas a commission agent acts at his own expense, the commercial agent is paid by the mother firm (ENNOS).

In the countries ENNOS is operating in, so far both models can be found. In the case of the Colombian market the focus will be on strategic partnerships. This does not mean that the agent model does not work for Colombia. The decision to focus on strategic partnerships has pragmatic reasons. To date more data would need to be collected for this model, as the main task so far, was to analyse and identify potential wholesalers for Colombia. For the analysis about the agency model as a strategic option further research in the field would be necessary.

As explained in the theory section of this thesis there are two main variables influencing the decision whether to concentrate on direct distribution channels or multiple-tiered channels. One is the average turn-over rate of the individual intermediaries and the other are the geographical and topographic conditions of the destination country. For both variables in Colombia, it can be concluded that the conditions are met to prefer a multiple-tiered distribution structure over a direct distribution. From the discussions with different potential partners the expected turn-over rate for the pump for local retailers is low. Estimations were around 1 pump per month for a medium sized retailer. The second element, topography, has already been discussed in the previous subchapter. The vast extension of the country, the underdeveloped road infrastructure in rural areas, the mountain belt of the Andes and the tropic climate with considerable extensions of rainforest in the eastern part of the country, constitute a considerable challenge for partners and technicians to reach customers, especially small farmers, many of them located in the very remote regions of the country. With respect to these two variables derived from theory, it would be indispensable to conclude that a multiple-tiered distribution structure is preferable. A further argument against direct forms of distribution is associated with the nature of the pump but also pumping systems in general. As concluded in the previous section, customer service and interaction makes up for a large proportion of the value proposition. The relatively high share of interaction with the customer as compared to other products, make it almost impossible to install direct channels of distribution.

Distribution channels also fulfil an important function concerning customer segmentation. Sales partners effectuate segmentation on their own or have a specific customer segment as their customer base. It is important to identify what type of customer a sales partner is able to target and what instruments he needs to do this effectively. So far, ENNOS provides general marketing material and support to all sales partners through its platform. However, this marketing material has not been segmented with respect to different customer segments. This is a viable strategy given that ENNOS so far has concentrated on one customer segment, small farmers. Notwithstanding, should ENNOS enlarge the portfolio of target customer segments, the marketing strategy and channels may have to go along with it. As already explained, different customers also react differently to the same arguments. The typical finca⁵ owner from Bogota, a customer segment analysed more profoundly in chapter 3.3.4, might put more emphasis on the environmental benefits of the product, its design and innovativeness, whereas a small farmer by nature will show more interest in the economic benefits of the pump such as increase in revenue through the possibility to irrigate and cultivate more land and the reduction of operational costs. This little example shows, that within a Business Model all components are connected and if a strategy is changed in one of those components, it is necessary to evaluate its effects on the others, to come up with a coherent strategy.

3.2.4 Cost structure and revenue streams

There are two main challenges for ENNOS concerning its cost and revenue structure. One concerns the pricing of the provided service and the other is the generation of constant return flows. With respect to the first, it has proved to be very difficult to gain information about how local companies price the service they provide, as this information is typically kept confidential. With help of an import agent however, the costs for shipment from India to Colombia could be identified. In this context, it can be shown that there are considerable economies of scale. An offer that was made to Partner 1 for 50 pumps came to an average cost for the shipment per pump of 22.5 USD. If the quantity was increased to a 20 flat rack container (which amounts to 290 pumps), this cost would reduce to approximately 8 USD per pump. Economies of scale are present on all stages of the value chain. From, the producer, as mentioned in chapter 3.2.1, to the local sales partners. The sooner ENNOS can manage to scale-up its sales, the earlier it will achieve financial sustainability.

As has been outlined in chapter 2.4.4, a company should consider various sources of revenue. Concerning ENNOS' revenue structure, three main sources of revenue could have been identified, two of which are not yet fully developed. The first revenue stream stems from licence fees the producer pays since the pump has been developed by ENNOS and therefore constitutes its intellectual property.

⁵ From now on the Spanish term "finca" is used to designate a ranch or farm that takes the function of a secondary home.

The second revenue stream is the margin ENNOS has, when it sells the pumps itself. This revenue stream is still underdeveloped as bigger quantities of sales have not been achieved yet. The third revenue stream entails further revenue sources based on the service ENNOS provides to its local partners. This service entails support and trainings in the technical as well as the marketing and sales dimension of the product. The proposition of this thesis will in particular focus on this last element. An important challenge for ENNOS, as it is a small firm, is how to generate constant flows of revenue. Including an additional service into its business model is a good alternative to tackle this challenge. From a BM perspective a platform model (see chapter 2.4.1) could be a possibility to generate recurring transactions through subscription fees. ENNOS already has such a platform in place. However, it is accessible to all partners for free. A possible strategy might be to distinguish between basic necessary information the partner needs, to be able to operate its business and additional helpful information that can only be accessed by paying a subscription fee. This new segment could then include tailored marketing material with respect to different customer segments or a network platform, where different local partners can connect with each other to exchange experiences and information. It could also be thinkable to include a platform where customer information can be exchanged. For example, if a retailer in Cartagena has contacts in Medellin for selling the pump, he might transfer that information to the local retailer there, as it is too far for him to sell the pump directly. An incentive structure may be introduced to promote this activity. This platform could also include a form of CRM software, helping the local retailers to keep up its customer relationships and seize new business opportunities. Further examples of how ENNOS may reform its business model in this way will be provided further below.

3.2.5 Value proposition

The aim of the value proposition is to capture all aspects of a firm's business model and evaluate what parts of it are able to create value for the customer segments the product is designed for. Since the pump has originally been designed to target small farmers, in the following the value proposition of ENNOS for this customer segment will be analysed. In the next section, further potential customer segments will be introduced. Concerning the pump, through various interviews the following characteristics proved to be particularly important:

Affordability

By far the most important element influencing a small farmer's buying decisions is the products' affordability. Small farmers typically lack resources and capital to heavily invest into new equipment for their production. In addition, even if capital is available, often they prefer to invest in commodities that improve their living standard immediately, instead of investing in a product that promises benefits only in the future (see also chapter 3.2.2). One of the reasons behind this, is the high level of

uncertainty felt by many small farmers in Colombia. Decade long civil war and fears of expropriation still dominates their minds. This makes it very difficult for farmers to plan further in the future. Convincing a farmer to invest in a new technology that generates benefits only in the long run is a very difficult task. However, two particularities of the Colombian market help to counter this problem. First, the Agrarian Bank (*banco agrario*), which is financed by the Colombian ministry of agriculture and rural development, helps smallholders to finance the purchase of agricultural machinery by providing loans to very favourable conditions, with interest rates between 0.9%-1%. This is far below normal market prices, which are often above 10% (Dinero, 2017). Second, in almost all agricultural sectors in Colombia cooperatives have developed, also providing financing possibilities for farmers (e.g. Federacion Cafetera Valle del Norte). Secondly, a comparatively large proportion (45%) of small farmers is not self-employed (Garay, L. J., Barberi, F. B. & Cardona, I. C., 2009, p.80). Employers typically have an interest in increasing their land's productivity and are also characterized by a higher purchasing power. For them, a product such as the ENNOS sunlight pump is affordable and the sales argument of having the opportunity to generate higher rates of returns in the long run is promising. This argument is especially convincing as many owners spoken to, complain about the high operating costs of the pumps they are using at the moment. There is also an incentive problem with this. An employed farmer has no incentive to economize water or fuel as the bill is paid by the owner. This increases the likelihood of the farmer to use water inefficiently, which raises costs for the owner. In this type of constellation, the long-term growth argument definitely has the potential to positively affect the client's purchasing decision. In other words, if ENNOS decides to target smallholders as the main customer segment in Colombia, it should focus on the land owner customer segment.

With respect to the size of this segment, it can be said that by far the largest proportion of agricultural producers in the rural area, are small farm households⁶. They make up for more than 90% of all agricultural producers. In absolute numbers this would amount to almost 950'000 households. (Garay, L. J., Barberi, F. B. & Cardona, I. C., 2009, p.18) With respect to the application possibilities of the pump in the rural population it can be said that in Colombia still a large proportion of this population does neither have access to water nor to energy. An analysis effectuated by the DANE (Colombian National Administrative Department of Statistics) reveals that 16% of agricultural producers do not have access to these services. With a total of 2.7 Million agricultural producers this would amount to more than 400'000 households. (Instituto Nacional de Contadores Publicos, 2016)

Operational Costs

The low operational costs are one of the most important elements of the value proposition for the smallholder customer segment. The reason behind this, is that price sensitivity, savings and income

⁶ Small in this context means between 0-5ha of land

generation play a much more important role for this segment as compared to other segments, as scarcity of resources is particularly pronounced within this segment. Therefore, when analysing operational costs, it is key for ENNOS' value proposition to analyse how the sunlight pump compares to competing products in this respect. With respect to diesel pumps, ENNOS has already put in place an elaborated tool for comparison. The "configurator" includes a tool, where diesel pumps can be directly compared to electric pumps. So far it can be said that in terms of efficiency the sunlight pump performs much better in comparison to diesel pumps than to electric pumps. Discussions with local farmers also show that some of them already realized, how inefficient diesel pumps are. However, the competitive advantage of the sunlight pump as compared to electric pumps is highly contingent on electricity prices. Especially in Colombia, where since 2000 the energy market has been liberalized (Pallavi, 2017, p.7), prices between regions and sometimes even between villages can vary considerably, which in turn affects the sunlight pump's economic value. For example, in the Valle del Cauca region energy costs are very high. It is not uncommon to have energy costs for the operation of a pump, similar to the capacity of the sunlight pump, between 120'000 COP (approx. 40 USD) and 200'000 COP (approx.70 USD). Various interviews led with local farmers support this conclusion. In other regions such as Guayeta (Boyaca), Tumaco (Nariño) or El Carmen (Santander) expenses for energy seem to be far lower, ranging between 30'000 COP (approx. 10 USD) and 80'000 COP (approx. 25 USD) per month⁷.

Independence

Finally, from the interviews led with small farmers it became clear, that independence is an important value to them. Independence from the electric network, as it is often unreliable such as in the Valle del Cauca region; but also in other regions. Independence from fuel is at least as important, because at some very remote places it is difficult to transport it and therefore it is often also very unreliable whether fuel even gets there. Finally, independence in this context also refers to the fact that a smallholder does not want to be close to the pump all the time in order to ensure its proper functioning. In the case of most pumps, farmers have to switch the pump on and off manually. Not having to worry about the pump all the time, is certainly an asset and a value to this type of customer. One respondent said: "Wow that's great! So I don't have to interrupt my "tejo"⁸ game all the time to go to look for the pump!" The fact that the sunlight pump needs little to no maintenance is certainly also an asset for those smallholders. Many of them made bad experiences with cheap pumps that get broke very quickly. It is important to include this into the sales strategy by asking the customer what

⁷ It needs to be said that this is a very rough comparison and should only be seen to give a general idea, as no information was given concerning the specific pump type that was being used in each place and no data was available about the specific quantity of water.

⁸ Tejo is a traditional Colombian throwing game.

experiences he already made with pumps. In these cases, focusing on the low maintenance advantage and the expected lifespan is more likely to convince a farmer of the advantages of the pump.

3.2.6 External environment

Macroeconomic environment

General growth rates in Colombia have proved to be relatively stable over the recent years. Although growth levels are comparatively low, between 0.5%-1% (Trading Economics, n.d.), it is important to note that in the recent past three mayor shocks hit the Colombian economy, from which it recovered relatively quickly. First, a strong devaluation of the Colombian Peso between 2014-2016 of more than 70% (XE Money Transfer, n.d.). Second, the sharp decline in commodity prices especially oil, which hit the 30 Dollar mark on January 2016 (Macrotrends, n.d.). In a presentation for the European Chambers of Commerce, Javier Diaz Molina (professor in economics of the Universidad Nacional) came to the following conclusions: The fact that Colombia still highly depends on the primary sector and therefore on commodity prices, made that the commodity price shock highly affected the Colombian economy. After the Oil and gas industry, agriculture is the second largest market for the Colombian economy. The most recent shock that hit the Colombian economy is the increasing immigration from Venezuela. The Colombian economy has proved to be very resistant to all of these shocks. However, acknowledging the deep economic and political crisis Venezuela is facing now, migration is not expected to stop soon. Javier Diaz Molina rather expects an acceleration of migration rates from Venezuela, which might become an increasingly important cause of concern.

Uncertainty and trust

Colombia has the lowest interpersonal trust levels worldwide (Our World in Data, n.d.). This is also reflected by potential customers' attitude towards engaging in new ventures. As a respondent noted, people in Colombia are very sceptical about new products and do not want to take too much risks in new ventures. The solar sector in Colombia is still very small and a product differentiating from others might appear too risky to some of the potential partners. This can also be seen from the negotiations ENNOS had with two potential partners. Both were very cautious when talking about the minimum quantities to buy. It is common that in this market, especially when a new and relatively innovative product is introduced, first orders include very small quantities. A further indicator of the degree of uncertainty is also reflected by the high-risk premia banks charge for loans. The average interest rate lies between 9-13% (Dinero, 2017). These high interest rates banks charge in Colombia are in stark contrast to the general financial market environment. Interest rates have been comparatively low in the recent years, with the Libor rate stabilizing around 2% (Banco de la Republica Colombia, n.d.). It

gives at least an idea of how banks in Colombia perceive risks of defaults. The bottom line is that risks and uncertainty can be considered to be comparatively high in Colombia and impede market entrance.

Institutions and regulatory regimes

As has been outlined in chapter 2.4.6, the external dimension of the BM definition includes institutions, markets and regulatory regimes. The market has already been mentioned. Turning now to institutions and regulatory regimes, the general impression gained from Colombia is that in the recent years a liberalization has taken place, facilitating the creation of new firms. Setting up a company in Colombia is quite simple. To create a new company only a statute or contract, a Colombian identity card and a bank account is required. After having filled out some documents from the chamber of commerce and submitting them to the DIAN, from which you will receive a confirmation and after paying a 0.7% tax of the inscribed capital for the company, the company is founded. (Mprende, 2014) In the recent years, Colombia has invested heavily in facilitating the establishment of new companies, which is beginning to bear results. According to El Colombiano (2018) in 2017 more than 20'000 more new companies have been grounded as compared to 2016 (from 301'000 new companies to 323'000 new companies). This trend is not likely to decelerate.

However, there are also some barriers to market entrance. One is the comparatively high value added tax, which amounts to 19%. The second regulatory challenge constitutes the RETIE, which is a Colombian norm, regulating all types of electronic devices. The basic question was, whether the pump would be subject to this norm. In conversations with different persons such as potential partners and import agents, there have been varying to sometimes even contradicting responses. The final response has been given by the import agent, who clarified this with the DIAN directly. The sunlight pump is not subject to this norm. This was a highly relevant question, as it would have raised costs considerably. For every imported container an additional fee would have been charged to obtain the certification for the RETIE. This fee would have cost between 2'500'000 COP and 3'000'000 COP for a 20 flat rack container or converted into US dollars between 840 USD and 1010 USD⁹. In a discussion with one potential partner, who is selling Grundfos pumps, the company Grundfos has reduced its product portfolio considerably in the recent years, exactly because of this norm. The RETIE norm can be considered to be a mayor technical barrier to trade.

⁹ The dollar amounts were estimated taking historical average exchange rates between USD and COP for the year 2017, which amounted to 2'962.26 COP for 1 USD according to www.investing.com.

3.3 ENNOS business model redefined

In this subchapter a new, refined business model for Colombia will be presented based on the insights about the Colombian market. Whereas in the previous section the focus was rather on the original target customer segment of smallholders, this chapter will enlarge the perspective and analyse various customer segments and try to propose a new strategy to target those segments.

3.3.1 Key resources and activities

Concerning key resources, as it has been previously explained, ENNOS benefits strongly from Switzerland's as well as the university's reputation. However, from numerous discussions, this can also have some drawbacks. Whereas Swiss products are widely accepted for their precision and quality, they also have the reputation of being high cost products. In Colombia, but also developing countries in general, price sensitivity is very high. When entering negotiations with potential partners, it became clear that the sunlight pump was rather perceived as a premium product. Its relation to Switzerland but also its high degree of innovativeness contributed to this perception. In this context, it is important to explain customers and potential partners that ENNOS is well aware of this and has therefore decided to collaborate with a production partner in India to maintain costs under control. However, marketing and communication should also adapt with respect to the target customer segment. For the smallholder segment, it is a central element of the marketing strategy. For other customer segments, that will be introduced below, the marketing strategy should focus on different sales arguments.

A second finding from the numerous discussions is that the reputation of universities in the private sector in Colombia is relatively bad. In particular, universities in Colombia are considered to be very theoretic and have comparatively little contact with the private sector. Explaining that the sunlight pump has been developed by the Bern University of Applied Sciences often raises doubts, whether the product might be fit for the market. It is often difficult to explain that it is more than a student project. The communication strategy should acknowledge this, by emphasizing the strong practical focus of this university and by explaining the Swiss education system, which has precisely created Universities of Applied Sciences to offer an educational option, which is closer to the private sector. It might also help to make the connection to the innovation park and take this as an example of how private companies and universities interact.

Finally, ENNOS also has the advantage of having the possibility to benefit from Jain's reputation. A company with longstanding experience in the market is an important reference. As trust levels in Colombia are very low, references and recommendations are key to close deals. Often being referred by a known person, is the only way to generate some trust. A managing director from Jain said concerning this: "If you wonder that you often get close to a deal but are not able to close it. Then it is

because there is a lack of trust. To overcome this, you need references.” Jain is a very good reference for ENNOS and the communication strategy could be designed as to emphasize this.

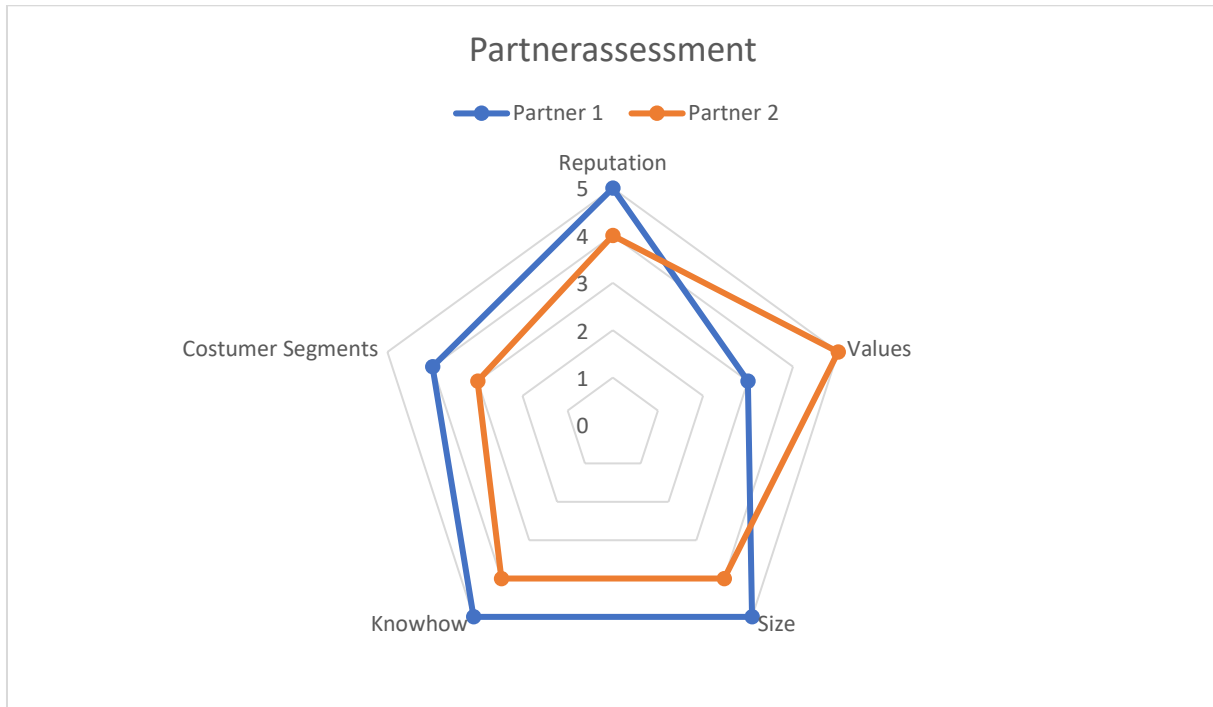
Concerning ENNOS’ key activities one model seems to have potential for growth, namely its platform. So far, ENNOS has not yet implemented a strategy to monetize its platform. On the background that ENNOS’ main resource is human capital and know-how, it has to think about ways on how to create revenue from this competitive advantage. One element of course is by selling its pumps. However, from a business model perspective further sources of revenue are thinkable. One is based on a platform model. ENNOS could for example start charging a monthly or yearly fee for access to its platform. As the platform also contains elementary information to enable partners to fulfil their task, it is difficult and not rational to charge a fee for this. ENNOS can only charge a fee for information that creates additional value to partners. One possibility is by providing additional marketing material and sales training documents tailored for specific customer segments. Another example might be the provision of a type of CRM program to the partners, in order to enable them to manage customer relationships more effectively. Finally, one might also think about an interactive platform, where for example retailers in different regions can exchange information about customers, contacts or other supporting documents. A retailer in the Guajira region who has family members living in Antioquia could then provide the local retailer in Antioquia with contact information and vice versa. With such a platform a network can be created that increases market penetration in Colombia and therefore also benefits ENNOS. It needs to be analysed whether such a platform system needs some incentives for retailers to share this type of information. In Colombia it is common to give a percentage of revenue to the person who established a contact, from which a deal emerged. However, implementing such a system might prove to be very complex and costly. To sum up, the main proposition from this paragraph is that ENNOS may start thinking about alternative sources of revenue based on its key resource and competitive core, which is human capital.

3.3.2 Finding strategic partnerships

One of the main objectives for ENNOS in Colombia was to find partners for distribution and sales of the product. Many contacts with different potential partners were made. The most important requirements for being eligible as a partner have already been established in chapter 3.2.1. According to these conditions especially two potential partners stood out. Both of them have an extensive pre-existing sales and distribution network, have experiences with pumping systems and their installation and showed willingness to collaborate with ENNOS. In figure 3 an assessment of both companies is provided with respect to their level of know-how, existing sales network, value compatibility with ENNOS, experience, financial stability and competing products. The variable “competing products” is reversed, in order to provide a consistent spider chart. This means if the company has many products

that might compete with the sunlight pump it will get a lower value, if there is no competing product in the partner's product portfolio the highest value will be attributed.

Figure 3: Partnerassessment Partner 1 and Partner 2



It becomes clear that Partner 1 is particularly strong in sales network, experience, know-how and financial stability. With a network of over 600 retailers all over Colombia and a strategic partnership with a leading DIY chain in Colombia, it can cover almost the entire country. Partner 1 also has over 40 years of experience within the market. This is also reflected in the know-how dimension. Partner 1 was the only sales representative of Grundfos and Lorentz pumps for many years and it has the licence for maintenance and repair for these brands. By visiting the repair section in the headquarters, it became also clear that Partner 1 has considerable know-how. They have a centralized repair section in charge of complicated repairs that cannot be done locally. There is a specially trained expert for every brand taking over this task. Concerning financial stability, Partner 1 can be seen to be very stable. The reason for drawing this conclusion is Partner 1's longstanding experience and its capacity to adapt to changed market conditions. In the recent years, various of Partner 1's brands have started their own operations in Colombia, therefore starting to compete with the company. However, it managed to overcome these challenges by reducing its product portfolio and focusing on after sales service and the provision of integrated solutions. This capacity to adapt, in combination with its experience of over 40 years in the market, leads to the conclusion that Partner 1 can be considered to be a stable company.

Turning to Partner 2, its strengths can be seen in the variables competing products and value compatibility. Sales network (around 150 retailers) and financial stability (part of a company group financed by a big foundation) also achieve high grades, however not as high as Partner 1. Partner 2 does not have any surface pumps in its portfolio. In the projects it has done so far, submersible pumps have been utilized. At the same time, this can also be considered to be a weakness of partner 2, as it does not have experience with surface pumps such as the sunlight pump. However, it has considerable knowledge with PV panels, as its focus is not only on pumping, but also solar energy production. As it is the case for Partner 1, Partner 2 also focuses on integrated solutions. Value compatibility is higher under the assumption that ENNOS' main target customer segment is the provision of water for the poor rural population. In fact, ENNOS is not focusing on this customer segment alone anymore. Only considering this customer segment though, partner 2 has a stronger customer base, whereas Partner 1 for example also has large farmers as its customer base.

Concerning the partners' weaknesses, two values stand out: Partner 2's low value in experience and Partner 1's low value in competing products. In comparison to Partner 1, Partner 2 is a very young company with less than 15 years of experience in the market. In addition, as already outlined, it has no experience with surface pumps. Partner 1 has much more experience, which it gained however also with pumps that might compete with the sunlight pump. It has Diesel as well as electric surface pumps. This might entail the risk for product cannibalization within its portfolio. This risk is a bit dampened by the fact, that Partner 1 does not have a big portfolio of small pumps and none within the segment of solar water pumps.

3.3.3 Distribution strategy for Colombia

The channel choice is highly dependent on the phase of development ENNOS is. Building up a completely new channel without any existing network is on an early phase very expensive. Therefore, building up a company-owned channel is not a viable strategy for ENNOS yet. As has been outlined in chapter 2.4.3, building up a distribution network involves many different steps such as: 1. raising awareness about the product and the value proposition 2. the implementation of feedback mechanisms 3. the effective purchase of the product 4. the delivery of the product and service and finally the service that will be provided after a product has been sold. If ENNOS wants to build up its own channels it needs to construct all these elements on itself and ensure that they meet the company's and product's requirements and quality. This is not a cost-efficient strategy. To enter new markets, ENNOS therefore needs to rely on partnerships with local networks to commercialize the pump. For Colombia three possible options can be distilled. First, an agency model. Besides partner 2 and partner 1, many different contacts with smaller firms were made, which also showed a vivid interest in the sunlight pump. As explained above, people are at first very sceptical about new products

and building up trust needs time. Therefore, first orders, also from potential wholesalers are typically very small. To achieve a faster entrance into the market and a higher coverage to raise awareness about the product (see first step) it might be necessary to focus on as many different potential partners as possible, as over time some might fall out or simply lose interest in the product. In such a setting a strategy needs to be implemented, that allows for working with retailers and potential wholesalers alike. In this context it might be interesting to introduce an agency model. A certain quantity can be imported in advance into a customs-free-zone and the quantity the sales agent needs, is extracted and nationalized from the zone depending on the demand. To reduce risks, an agreement can be put in place, that as long as the pump remains in the customs-free-zone, it remains property of ENNOS. This setting allows for uniformity of conditions as all customers are given equal conditions and the customer has the advantage of being able to buy the product directly from ENNOS. If introducing such a model, there should be no difference in the conditions between retailers or potential wholesalers. Price incentives should only be given with respect to the ordered quantity. Instead of negotiating special prices with wholesalers, a stronger regression in prices with respect to quantities could be offered for all. It would roughly have the same effects as negotiation, because a wholesaler is more likely to sell bigger quantities in the long-run by at the same time having the advantage for ENNOS not to have to deal and negotiate prices with every wholesaler and/or retailer. In the particular case of Colombia, where there is a situation with two larger size potential partners (Partner 2 and Partner 1) and various smaller potential Retailers, this model only works, if the potential wholesalers do not require exclusivity rights for the market. In this particular case, exclusivity has been mentioned only by Partner 1 at the beginning of the negotiations. On later encounters, this has not been an issue anymore. Concerning exclusivity rights, it needs to be said that they are not common in Colombia, especially not at the beginning of negotiations. This is due to the fact that, as already explained, initial orders are small and market potential is often difficult to estimate. For ENNOS, giving exclusivity rights is not a good option for the moment, as it is in the first phase of building up a distribution network and therefore needs to raise awareness. Giving exclusivity rights would considerably reduce the potential for raising awareness, as it strongly limits the number of potential partners involved. A problem that might arise with an agency model, is that it could prove to be difficult to change this model for a wholesaler-retailer model, as existing retailers may become reluctant to accept a wholesaler selling to them and charge a margin. A further challenge with the agency model is service quality and know-how. As ENNOS sells its pumps to many partners through an agent, it is the agent and ENNOS, who need to ensure appropriate installation and after sales service. As explained above, ENNOS can do this by implementing a certificate system. However, more partners there are, more complex the system becomes. In addition, to ensure a lasting effect of these certificates also a monitoring system and refreshment trainings need to be put in place. Doing this with multiple partners is more complex and

costly than doing it with only a few partners. ENNOS can charge partners for trainings, however to be able to effectuate trainings also sufficient capacity in terms of time and human resources needs to be at its disposition, which might become difficult when the number of retailers rises significantly, as ENNOS is a relatively small company.

It also needs to be said that this model involves costs and risks. Storage at the free-customs-zone in some countries is very costly. In the case of Colombia however, these costs are comparatively low. For the first month a fee of 350'000 COP (approx. 125 USD¹⁰) per pallet is charged. For every further month the load remains in the customs-free-zone a fee of 37'000 COP (approx. 13 USD) per pallet is charged. Although these costs may appear to be low, in the long run they can prove to become important. Moreover, ENNOS is taking the bulge of risk in this setting. Every month that goes by, ENNOS' margin is reduced and if the pumps cannot be sold at all, they need to be shipped back or to another country, which involves further costs.

In general, it can be said that following an agency model can prove to be a very viable strategy for ENNOS in Colombia, especially for entering into a new market. However, as the market matures, it might become economically more advantageous to turn it into a two or multiple-tiered distribution system. If ENNOS decides to follow such a strategy, a wholesaler-retailer system can be put in place. In the specific case of Colombia this strategy would mean to either work with Partner 1, Partner 2 or both. To penetrate the market in the most efficient manner of course, it would be preferable to work with both of them, under the condition that both are willing to accept that there is another wholesaler. As both companies are focusing on a different market and customer segment, it might be a viable strategic option. Neither of them seem to insist on exclusivity. In addition, both have shown willingness to collaborate, however by only starting with small quantities, which gives ENNOS some negotiating power in terms of exclusivity as this is only an option if larger quantities are involved. To put it bluntly, if the wholesaler is not willing to engage in larger quantities, he needs to accept that ENNOS is also looking for other sales partners and therefore might result in collaborating with various partners. As it was the case for the agency model, also here a uniform pricing structure is preferable. First, to avoid frictions among both partners. Second, to provide sufficient incentives for selling larger quantities. A possible pricing structure is to charge higher prices for all quantities below a container and only propose the more favourable wholesale price with a quantity of 290 pumps¹¹. Such a pricing model has been proposed by the ENNOS Marketing and Sales department recently. The big advantage of this model are reduced costs and effort for ENNOS, as it has to deal with fewer partners. In addition, Partner 2 as well as Partner 1, both already have a network of technicians and salespersons in place,

¹⁰ According to the 07.05.2018 exchange rate of 2816.9 COP/USD

¹¹ This is the approximate number of pumps that fit into a 20 flat rack container

which also facilitates the provision of a high quality after sales service. Especially in the case of Partner 1, such a system is already present and even forms an integral part of the firm's core strategy and value proposition.

Finally, a third strategic option might be thinkable, which entails a combination of both strategies. ENNOS could choose to follow both strategies simultaneously. As has been explained above, exclusivity is not a salient issue, therefore ENNOS might choose to work with retailers through a sales agent, who at the same time could also manage relationships with Partner 1 and Partner 2 as wholesalers. The vast extension of the country and the different market segments of both companies, reduce the likelihood for these companies to become direct competitors. As can be drawn from the discussion with the Centro Nacional de Produccion mas limpia (CNPML), Partner 2's main competitor seems to be another company than Partner 1. In addition, Partner 1 is more focused on the agricultural sector, whereas Partner 2 works more on specific projects and is rather represented in the domestic sector.

Within this strategic option, it might also be interesting to think of the introduction of a further level concerning the certificates ENNOS wants to issue for sales partners. A new, highest-level certificate could be introduced, which gives to the partner the capacity and responsibility to issue own certificates. However, such a certificate can only be given to partners with which ENNOS already has long term relationships and could built up trust over the years. It is a proposition to keep in mind for the farer future.

Concerning the last element of distribution channel construction namely after sales service (see chapter 2.4.3), a well elaborated monitoring system needs to be put in place. This system does not only fulfil the function of ensuring the proper functioning of the pumping system but also to gain valuable market insights. This is also of relevance for customer segmentation and relationships. As technicians are called to a customer, when there is a problem with the pumping system to fix, this client contact should be used as effectively as possible. Besides the obvious technical information that can be downloaded from the pump directly via the sunlight pump app, the technician should also be trained to gather further information about customer satisfaction and the utilization of the pump. A questionnaire or guideline for the technicians could form the basis to collect this data. This questionnaire may even be incorporated directly into the app. This should then be shared with the local retailer, wholesaler and finally ENNOS. In response to that, ENNOS can adapt its marketing and sales strategy. Such a proposition will be made in chapter 3.3.4. ENNOS has been well aware of the importance of feedback and has included it into its BM, however a stronger focus on marketing relevant information could further increase the value and quality of this feedback and finally the strategy of ENNOS.

With respect to building up company-owned distribution channels, this option becomes viable in mature markets, when the product is already established. It is in this market environment that investment in an own infrastructure and vertical integration becomes economically viable. It is only on this stage that risks of such investments become lower as the company already gained market intelligence as well as experience and it is a good strategy to increase margins.

3.3.4 Strategic customer segment

Besides smallholders, during the time spend in Colombia, also other customer segments could have been identified. The empirical basis for customer segmentation is given by the different options for the application of the sunlight pump. Three new application types were added in response to the market analysis effectuated in Colombia: 1. Application in the processing of agricultural products 2. Tourism 3. Domestic water supply with a pressure tank.

These new applications all address needs of different customer segments. The first new application type, which refers to processing, is restricted to only specific types of agricultural products, as not all products need water in processing. A good example for this, is the coffee production. Coffee does not need irrigation in its cultivation processes, however water is needed for processing. The machine that separates the pit from the shell is highly water intensive. In addition, a minimum of pressure is needed for the machine to operate properly and this processing step is often still done at each individual "finca". However, new machines are penetrating the market now, some of which do not need any water at all. Another step in the production of coffee that requires water, is the washing of coffee beans. Arabica coffee for example is always washed twice. Once before the separation of the shell from the pit and then again directly after this process. Washing is water intensive in the coffee production. What however strongly speaks against the necessity of pumping systems in this region, is its geography and climate. The coffee region is very rich in water, has a wet climate and since it is located in the Andes region, often pumping is not necessary since gravity is sufficient to produce enough pressure.

There are however other types of crops that indeed need water and are cultivated in other regions of the country with more need for pumping. A good example is the Banana production, in which the washing process is also highly water intensive. The typical banana cultivation regions are in the North Coast of Colombia. This region can be very dry, especially during summer and the topographical conditions often do not allow for water being provided using gravity, which makes pumping water necessary. In this region the agricultural processing market segment may prove to have considerable potential for ENNOS.

The question now is to what customer segment this refers to. The typical customer segment for processing of agricultural products is very similar to the smallholder customer segment, but it can also be more extensive. Smallholders fall under this application as far as they are vertically integrated. There is also another customer segment addressed by this application, which are fincas focusing on agricultural processing. Often local farmers bring their crop to a nearby finca for further processing. It has been noted that centralization is an impediment to the application of the sunlight pump. However, in some cases, these fincas can still be relatively small or the process is not too water intensive, therefore rendering the utilization of the sunlight pump viable.

The second new application is agritourism or sustainable tourism, a sector that is growing rapidly in Colombia (Pinot de Libreros, Rojas & Mora, 2013, p.4). Between March 2012 and February 2013 more than 160 million overnight stays could be counted out of which 9 million were in secondary residences such as "fincas". (Pinot de Libreros, Rojas & Mora, 2013, p.12) In this context the pump can be used for artificial ponds, swimming pools, irrigation of the surroundings or the provision of water within the accommodation. One interesting example stems from Villa de Leyva. Since this village is located near to Bogota, it represents a well-attended and popular destination for short-term trips. An interview with a small hotel owner nearby this village revealed interesting insights. Provision of drinking water is provided by the village, however irrigation of the hotel's surroundings (trees and pasture) is done by pumping water with an electric pump from a nearby pond. Water requirement is around 9000 litres a day. Concerning the electricity costs for the operation of the pump the owner estimates 200'000 COP (approx. 71 USD) per month. Vertical elevation is around 6 meters, and suction depth is 2 meters. Including minimum radiation for Tunja (a city located near Villa de Leyva), which is in June with around 4.2 kWh/m²/day (Atlas, n.d.), this application can be run with a 300-Watt PV panel (according to the configurator). Taking into account the expected costs for the sunlight pump plus panels, this hotel owner would have paid the pump plus panels in about 18 months, only by the economies from operating costs. Energy prices vary considerably in Colombia with respect to two relevant factors. One is the fact that the Colombian energy market has been liberalized in the year 2000 (Pallavi, 2017, p.7), which accounts for important differences among different regions and sometimes even villages. The second important factor entails the stratification of Colombian society into 6 different classes. From 1 (the poorest) to 6 (the richest). With respect to these classes Colombia has introduced a system of distribution from the rich to the poor by installing a progressive price system for energy and water. The higher classes pay higher prices for energy and water to subsidize energy and water for the lower classes. This in turn means that the lower classes get energy and water almost for free, which reduces the economic viability of the application of the pump as operation costs of electric pumps are very low in this potential customer segment. In turn, hotels and tourist fincas are usually classified in higher classes, which consequently entails higher energy costs. This is also the explanation, why this hotel

owner has to spend so much on energy for the operation of his pump. For these reasons, the hotel and accommodation sector in rural areas may constitute a more interesting customer segment for ENNOS, as they are more likely to be in a higher class and therefore pay higher prices for electricity, which in turn also increases the economic viability of the sunlight pump. From a geographical perspective, the region around Villa de Leyva is interesting for the application of the pump. First, it is a region with a particular microclimate. It is very dry, which can be seen from the fact that there is even a desert nearby. Second, there is a high density of superficial groundwater in ponds, which favours the utilization of superficial pumps. In the same way also interviews with hotel owners in the coffee region were led. However, in this region there is only little market potential. As already outlined above, this region is very humid and rainy. In addition, as it is located in the Andes region, water can be extracted from higher located sources and by using gravity, the utilization of a pump becomes needless. The Valle del Cauca region, located between the coffee region and Cali in turn, has a similar climate to Villa de Leyva, however further analysis would be required concerning the existence of superficial water.

The third customer segment, which is the domestic provision of water with a pressure tank, promises to be the customer segment with most potential for ENNOS in Colombia. It is also the main recommendation of this thesis. Before turning to this customer segment, a brief remark needs to be made about how this customer segment has been identified. As seen in the theoretical part of this thesis (see chapter 3.2.2), customer relationships in the context of buyer-supplier relationships can also constitute an important source of innovation and value creation. The way this customer segment has been identified in Colombia is a good example of this process. In collaboration with the potential partner Partner 1, market intelligence has been collected and a new solution was offered in response to the customers' needs in Colombia. In the many discussions led with local engineers from Partner 1, it became clear that the domestic application for the water pump is highly demanded in Colombia. This type of application is not new to ENNOS and has already been implemented. However, a further refinement was developed by the author in collaboration with engineers from ENNOS and Partner 1. The feedback from the market, was that concerning domestic water supply for Colombians, it is important to be able to connect various taps to the water source and that these should be under pressure. In addition, for these customers it is also important, that the pump does not start pumping for every amount of water that is utilized. In other words, if the pump would be connected directly to different taps, the pump would start pumping even if a person only takes a glass of water. This would mean that the pump would start and stop pumping many times a day, which may reduce the pump's lifespan. Finally, customers also want to ensure that the water coming out of the tap is clean. If domestic water provision would be connected directly to a big tank, the probability of contamination would rise exponentially, in case the water is not utilized for a longer period of time. In response to these needs, an automated system to pressurize water has been developed. It involves the

combination of the pump with a pressure tank and a pressure switch. In this setup, various taps can be connected and the customer will have pressurized water in the entire house. As soon as water is used, the pressure in the pressure tank will fall. If the pressure hits the lower limit, the pressure switch gives a signal and the pump will start pumping until the tank achieves maximum pressure again. With this application the number of starts and stops for the pump can be reduced and a pressure of up to 4 Bar can be achieved. (see Appendix C)

The way how this new application has been developed is a good example of value co-creation between the customer and the supplier. It also shows how important it is to gather market information to be able to adapt the value proposition to customer's needs and preferences. In Colombia, in almost all houses and buildings a water tank can be found on the roof. In rural areas it is used for the domestic provision of water, in urban and more developed areas, it is installed as a security, should the water supply fall short one day. For the same reasons outlined in the previous subchapter, for ENNOS it is more interesting to focus its strategy on customer segments from higher classes (estrato 4-6), as these pay higher energy prices. In addition, they are also characterized to have a higher purchasing power. Although, if adapted for its efficiency, quality, innovativeness and low operational costs the sunlight pump is an inexpensive product, the many discussions led in Colombia showed that it is still perceived as a premium product. This further enforces the conclusion that focusing on customer segments from higher classes may prove to be more successful. It is also this same customer segment, that gives more weight to having more comfort by having pressurized water and an automated system. Consequently, this same customer segment is more likely to prefer the application with a pressure tank.

The question now raises what this particular customer segment consists of. As it was the case with hotel owners in the agricultural sector, the main segment consists of relatively wealthy finca owners, who possess fincas in rural areas for vacations. For wealthy people in urban areas it is very common to have fincas in the surroundings of a city. Typically, in these surroundings the electric network does not work reliably or is inexistent and there is no connection to a water provision network. For these finca owners, pumping water from a nearby pond is a necessity. First and foremost, pumping can be used for the domestic provision of water but also for irrigation of the finca's surroundings. Typically, finca owners employ some farmers to maintain the finca all the year around. They are also often allowed to do some farming on the land to improve their income. This also means that the pump can be utilized all over the year and not only during vacations. With its capacity of being able to pump up to 16'200 litres a day, the pump is also able to pump water for several households. By taking an average water flow of the pump of 50% of the maximum capacity (around 8000 litres) and an average consumption

of 600 litres a day per household, more than 13 households could be provided with water¹² (Granada, 2011, p.43). This may lead to the conclusion that ENNOS should focus on domestic water provision also in agglomerations. However, there is an important conflict between purchasing power and quality of the existing water network. In agglomerations, people of higher classes live in areas where domestic water provision is not an issue and people from lower classes do not have the purchasing power for the pump. This is the reason why the utilization of the pump in urban areas is not viable yet. Again, it might become an option for domestic water provision for lower classes. This can however only be done in collaboration with institutions (e.g. sanitation projects of the Colombian government or development projects from NGO's etc.). This is the basic rationale of why focusing on finca owners. They are the only customer segment that combines both, sufficient purchasing power and necessity for the utilization of the pump.

In figure 4, the two main customer segments (smallholders vs. finca owners) for Colombia are confronted with each other. With exception of one characteristic, all elements speak in favour for ENNOS to focus on the Finca owner and agritourism customer segment. Agritourism is also included here, as it constitutes a subset of the more general finca owner segment. In fact, many accommodations in the agritourism sector are fincas. Moreover, limits between the two are often difficult to draw, as finca owners often utilize their infrastructure in different ways e.g. by privately renting it, by lending it to relatives or using it for themselves.

As can be seen in figure 4 the finca owner/agritourism customer segment is expected to be smaller in size as compared to the smallholder customer segment. However, it still entails considerable market potential. According to the DANE, more than 9 million overnight stays in secondary residences between March 2012 and February 2013 were counted on the national level (Pinot de Libreros, Rojas & Mora, 2013, p.12). This statistic only counts regional tourism and does not count international tourism, which would need to be additionally included, if ENNOS decided to focus on the entire agritourism sector. Although the finca owner customer segment is smaller as compared to the smallholder customer segment (see chapter 3.2.5), in absolute terms it may still constitute an important customer segment for ENNOS to focus on. In addition, higher purchasing power, higher risk capacity and shorter time to market, further enforce this conclusion. With respect to time to market one brief remark needs to be made. The reason for drawing the conclusion that time to market in the smallholder customer segment is expected to be longer, stems from the fact that this market segment can only be targeted, if ENNOS manages to collaborate with respective institutions that facilitate access and financing of the pump for smallholders. In other words, an additional layer within the value

¹² The average from all regions was calculated from table 1 of the Granada (2011, p.43) water consumption study, which amounts to 19.5m³ per month per household. This amounts to 650 litres a day per household.

chain needs to be built up and managed, which is likely to require more time. In contrast to this, concerning the finca owner and agritourism customer segment, ENNOS can start selling directly.

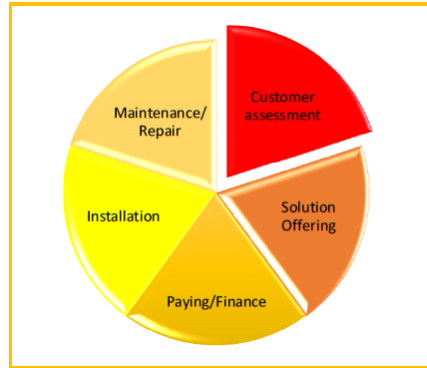
Figure 4: Comparison finca owner and smallholder customer segment

Finca owner (estrato 4-6)/ Agritourism	Smallholder
Less price sensitive	Very price sensitive
Comfort oriented	Up-front investment as impediment
High purchasing power	Low purchasing power
High risk capacity	Low risk capacity
Customer segment smaller in size	Customer segment bigger in size
Longer term orientation	Short term orientation
Integrated value offering	Reduced value offering
Shorter expected time to market	Longer expected time to market

It needs to be said that the conclusion of this thesis is not to focus only on this customer segment. However, this segment constitutes a viable strategy for market entrance. As the market matures and the sunlight pump becomes established within the market, starting to focus on other segments may indeed become viable. Discussions led with facilitating institutions, led to the conclusion that they only start thinking about investing in a project, once a value and supply chain has been established and the product has gained some importance within the market. This further supports the fact, that ENNOS should first find a way to enter the market and build up its brand before turning to customer segments that need institution's support.

Up to now, a strategic customer segment and its necessities and preferences have been defined for ENNOS in Colombia. The question now is, how ENNOS can adapt its value proposition and market and sales strategy to meet this customer segment's needs. A first answer to this question has already been given. The customer segment in question is in need of a comfortable solution for domestic water provision. Comfortable in this context means: Possibility to connect various taps, pressurize water, automated system, long life span (minimize starts/stops) and clean water. In response to this need, the value proposition can be extended by offering a tailored solution consisting of the sunlight pump in combination with a pressure tank and a pressure switch. This is however only one part of the solution. In order to be successful in this segment, ENNOS also needs to adapt its marketing and sales strategy correspondingly. One aspect of this; is that it needs to be able to provide an appropriate service quality. As a customer segment favouring comfort over low-costs, a strategy of providing integrated solutions promises to be most rewarding from a BM perspective. In other words, if such a customer comes to the local partner with his problem, a solution should be offered to him consisting

of all necessary steps to satisfy his need. For this, a process needs to be put in place including all phases from the analysis of the customer's specific problem to after sales service. A proposition of such a process is given by figure 5. This is an example of how a sales person or a technician can recollect relevant data from the customer, update information and propose a tailored solution. At the same time, it also constitutes the basis for ENNOS to gain valuable insights into the market. In negotiations, ENNOS could pursue a policy of requiring sales people and technicians to fill out these forms and transfer to ENNOS. In response to this feedback, ENNOS then has the possibility to adapt its value proposition.



Customer Assessment

Personal Information

Name: _____

Family Name: _____

E-Mail Address: _____

Local situation

Use the configurator tool and fill it out together with the customer. Insert the results here:

Number of pumps needed

- 1 2 >2

Diameter of hose suction side

- 25mm 32mm 40mm 50mm 75mm 100mm

Diameter of hose pressure side

- 25mm 32mm 40mm 50mm 75mm 100mm

PV Panel Size

- 100 Watt 200 Watt 300 Watt 400 Watt

Customer information

1. How does the customer utilize water at the moment? / What application/pump does he already have?

2. What experiences did he make so far?

I want everything done for me (installation, maintenance, repair)

I strongly agree				Don't agree at all
------------------	--	--	--	--------------------

I want above all a cheap pump no matter what the operation costs are

I strongly agree				Don't agree at all
------------------	--	--	--	--------------------

How much do I spend now on my water consumption per month?

0 COP	<100'000 COP	100'000 – 200'000	>200'000 COP
-------	--------------	-------------------	--------------

Figure 5: Example of a questionnaire for customer assessment

For what purpose do I need the pump?

Domestic	Irrigation	Processing	Livestock
----------	------------	------------	-----------

If domestic continue here:

Do I need to connect various taps?

- Yes No

Do I need the water to be under pressure?

- Yes No

Do I need it the pump for my holiday home?

- Yes No

Did you already hear about Solar energy? What do you know about it?

Customer attitude

I always look for the most comfortable solution

I like challenges

3	2	1	0	1	2	3
---	---	---	---	---	---	---

I prefer quality over a low price

I prefer a low price over quality

3	2	1	0	1	2	3
---	---	---	---	---	---	---

I think thoroughly before I buy something

When I see something I like I buy it

3	2	1	0	1	2	3
---	---	---	---	---	---	---

I am disposed to take risks to win

I prefer to maintain what I have

3	2	1	0	1	2	3
---	---	---	---	---	---	---

Remarks by the sales person

Name of the sales person

Date, Signature

As can be seen in figure 5 on the upper left, the document is only an example for one element of the process. The same work would need to be done for all process parts, such as solution offering, paying/finance, installation and after sales service. The example may be a possibility of how ENNOS could include a sales training into its technical training. Having well trained sales persons is at least as important as having technicians. The example above is only a very condensed version of how it may be done. It is restrained to the “finca owner” and a more comprehensive questionnaire would need to be developed to be able to capture various segments. The idea of the customer assessment is to find out what type of customer a sales person has in front of him and to what customer segment he belongs to. It also helps to find out what sales arguments promise to be most convincing. In this context it would also be possible to develop different marketing material with respect to the segment or type of customer. The sales person can outline different characteristics of the value proposition depending on the type of customer he wants to address. If a customer highly prefers comfort over challenge, the fact that an automated system can be installed is a more convincing sales argument than the products innovativeness. If the potential client is highly price sensitive a focus on the low operating costs is more likely to be successful than its environment friendliness. A customer is not only more likely to buy a product if the sales strategy is tailored to his needs, he also more likely to be satisfied by it, as advantages can be shown to him that he might not even have thought of.

In the last part of the process, maintenance and repair, it is at least as important to collect data. If a technician already has to visit a customer, he should benefit from this visit to collect more information about the customer. It gives important longitudinal information for ENNOS, to see how the pump works in the field and how satisfied customers are in the longer term. Here, ENNOS could for example develop a technician version of the app, which allows the technician to fill out a form directly with his smartphone. The lower the opportunity costs of filling out, the higher the probability that it will be done. It could also be connected to a type of incentive for the customer and/or the technician.

All these examples show, how ENNOS could further support its local partners in marketing and sales. Besides the fact that all will benefit from higher sales, it may also constitute an important source of revenue for ENNOS, as ENNOS may charge for this service. In fact, it is already pursuing such a strategy. This would just add an additional piece in its value proposition.

3.4 Insights from this chapter and strategic advice

After having outlined the key elements of ENNOS business model, various strategic options were shown for ENNOS. The most important insights concern customer segmentation. It has become clear that ENNOS should not focus on smallholders in the first place in Colombia. The market dynamics as well as the characteristics of this segment itself make it exceedingly difficult to enter this market. ENNOS is more likely to be successful in other customer segments, above all the finca owner/ agritourism sector. This sector has more purchasing power and is more likely to value the sunlight pump and its associated service. Although it is smaller as the smallholder segment, there is still enough potential for growth. Moreover, concerning the type of application for the pump, ENNOS should rather focus on the domestic provision of water than irrigation. The properties of the pump as well as the local market conditions and needs, favour the utilization of the sunlight pump for domestic purposes. Another key insight was that the pump is rather perceived as being a premium product. This further enforces the argument to rather focus on segments with higher purchasing power. Should ENNOS nevertheless decide to focus on smallholders as the target segment, then it can only do so in collaboration with respective institutions, who take the role as facilitators (government agencies, agrarian bank, NGO's etc.).

In response to the newly defined customer segment, ENNOS would need to adapt its marketing and sales strategy. This may include segmented and tailored marketing material, the provision of a sales training and the introduction of questionnaires to support the customer efficiently throughout the whole process and for the generation of market intelligence for ENNOS as well as its partners.

Concerning its distribution strategy, ENNOS should leave open as many strategic options as possible and start negotiating with different potential partners (wholesalers and retailers alike). The experience has shown that first orders often involve very small quantities and that negotiation may not always prove to be successful. Therefore, having various options at its disposal is more likely to draw fruitful results. In addition, ENNOS should not give exclusivity rights to none of the partners, no matter what its potential is. ENNOS is in a phase, where it must above all raise awareness about the product and needs to enter new markets. It cannot afford to limit its options in such a phase. Concerning the distribution structure, an agency as well as a two or multiple tiered system can be viable. However, important would be the introduction of a uniform pricing mechanism. A pricing system with higher regression for higher quantities could be a favourable solution as it reduces the costs for ENNOS to negotiate with partners, tampers the risk of frictions among them and has similar effects than a differentiated pricing mechanism of a two- or multiple tiered distribution structure.

Finally, to generate more constant revenue streams ENNOS could envisage to start implementing a platform BM. This would best reflect ENNOS' core resources, competencies and competitive edge.

4. Conclusion

4.1 Practical Contribution

The main objective from the empirical part of this thesis was to provide a new, refined business model for ENNOS to facilitate market entrance in Colombia. As a result, various strategic options could have been identified. The main finding was that the smallholders constitute a difficult customer segment to enter the market and that ENNOS should rather focus on another segment for market entrance. This segment is the finca owner/ agritourism segment. Different propositions were made on how this segment might be approached. First, a segmentation and sales process needs to be implemented, allowing for targeting the right customers and providing the appropriate service. Second, marketing documents and material should be designed as to fit the specific customer segment's needs. Third, training should not only be done with respect to the technical dimension of the product but also include marketing and sales elements.

Besides this main strategy a variety of other strategies were proposed. Different distribution strategies for Colombia, an analysis of the regulatory requirements for the pump, the import costs and the introduction of a platform model could have been presented. Furthermore, as a result of this analysis, also negotiations with potential partners were effectuated and there are good reasons to be optimistic that ENNOS could enter into the Colombian market within the following months.

Trips to several different regions also revealed important insights. It was possible to classify some of them with respect to the potential they have for the commercialization of the sunlight pump. From regions such as the region around Villa de Leyva and Valle del Cauca, who proved to have favourable conditions for the utilization of the sunlight pump to regions such as the Eje Cafetero or the Meta, with less necessity for this type of product. However, it needs to be said that it constitutes only a small sample and therefore the conclusions drawn with respect to the different regions cannot be claimed to be universal. The guajira region promises to have very favourable conditions for the application of the pump, however it was not possible to visit this region for collecting empirical data and make a profounder analysis. This could be a subject to a future analysis.

It also needs to be said that this analysis is not conclusive and some elements are missing. The most important missing element is the local partners' cost and revenue structure. As this is naturally kept confidential, it was not possible to make a further analysis on this topic. A more profound analysis of competing product could also have revealed more insights about the pump's competitiveness for the Colombian market. This could also be very helpful for future negotiations with potential partners.

4.2 Theoretical Contribution

From a theoretical perspective the BM generation model provides a useful guideline to capture and structure all important elements of a company's BM and provide a framework to develop new ones. However, through the analysis effectuated in this thesis also some weaknesses became apparent; two of which need particular attention:

First, the lack of inclusion of the external environment into BM concepts. As it could already have been concluded, in the theoretical part of this thesis, most BM generation models are inward-looking. Especially those conceptualized as consisting of various components. This paper tried to take a clearly outward looking perspective not only by including the analysis of the market environment as an additional component, which was originally not included in Osterwalder, Pigneur & Clark's (2010) BM generation model, but also by taking an externally oriented viewpoint on all components. This for example helped to analyse the effects of uncertainty and risks, derived from Colombia's political as well as socioeconomic situation, for the smallholder customer segment. Smallholders are particularly affected by the country's unresolved conflict of landownership. This in turn changes their perception of time and the decisions they make, which finally also affects the strategy of how to target this segment. Another example are Colombia's very low levels of interpersonal trust. These affect how negotiations with local partners took place and the way ENNOS should position itself within the market. Another example are the geographical and topographical conditions of the country. They not only affect distribution channel choice, but also the value proposition of the product itself. As could have been concluded, the value of competing products (diesel as well as electric pumps), highly differs between regions and sometimes even between villages. The existence/inexistence of an electric network, the differing prices and the high opportunity costs of transporting energy (in the case of diesel pumps), all affect the competing products' value proposition and therefore also the value proposition of the sunlight pump. To cite a final example, also the reputation of a company, in this case ENNOS, is contingent on external factors. This could have been shown in the general scepticism prevalent within Colombian society towards universities. A condition, which seems contra-intuitive at first sight. All these conclusions could not have been drawn, if a purely inward-looking perspective would have been taken.

A second element concerns the element of time. Often the sequence of events as well as the phase a company situates itself affects its strategic options and therefore also the adaptation of a business model. By constructing a business model from different components, often time is overlooked. As has also been noted in the theory section, transactive and change models so far got only little attention within the academic literature. Two examples from the empirical section show the importance of time:

First, concerning distribution channel choice, strategic decisions are not only contingent on the market the company is operating in, but also on the structure and time horizon of the firm itself. ENNOS is in an early phase of its commercialization and its structure is above all dominated or restricted by its size. A business model should acknowledge this. For example, the size of ENNOS would not allow to build up own distribution channels. Moreover, as ENNOS is in an early commercialization phase, for now the most important goal to achieve is above all raising awareness. In the empirical section of this thesis, this led to the conclusion that ENNOS should focus on various partners simultaneously, that exclusivity was not an option and that the pricing structure should allow to include many different types of partners. In other words, the phase of commercialization ENNOS situates itself, influences the strategic options it has at its disposal. If ENNOS were in another phase, building up an own distribution channel indeed may have been an economically viable option. The same applies to customer segmentation. Here, time proved to be at least as important. Having smallholders as the target customer segment is an option, however it comes along with a longer time to market and a more complex construction of partnerships, where additional layers need to be included. This might surely be an economically viable option, especially considering that the agricultural sector is the second largest sector within the Colombian economy. However, the phase ENNOS is at the moment, requires shorter periods to market and the construction of such partnerships with facilitators does not only need time, but also an already existing sales and distribution network. In other words, the sequence of how different strategic options are implemented and the phase a company situates itself are highly relevant for the generation or adaption of a business model. The academic literature however does not sufficiently account for this. Here a stronger focus on transactive processes and change models should be done in future research.

References

- Abdelkafi, N., Makhotin, S., & Posselt, T. (2013). Business Model Innovations for Electric Mobility: What Can Be Learned from Existing Business Model Patterns. *International Journal of Innovation Management*, 17(1), 1-41. doi: 10.1142/S1363919613400033.
- Adner, R. & Kapoor, R. (2010). Value Creation in Innovation Ecosystems: How the Structure of Technological Interdependence Affects Firm Performance in New Technology Generations. *Strategic Management Journal*, 31, 306-333. doi: 10.1002/smj.821
- Adner, R. (2006). Match Your Innovation Strategy to Your Innovation Ecosystem. *Harvard Business Review*, 84(4), 98-107. Retrieved from: <http://pds12.egloos.com/pds/200811/07/31/R0604Fp2.pdf>
- Afuah, A. & Tucci, C. L. (2003). *Internet Business Models and Strategies*. (2nd edition). New York: McGraw-Hill. *researchgate.net*. Web. 3. March 2018.
- Amit, R. & Zott, C. (2001). Value Creation in E-Business. *Strategic Management Journal*, 22(6), 493-520. doi: 0.1002/smj.187
- Amit, R. & Zott, C. (2012). Creating Value through Business Model Innovation. *MIT Sloan Management Review*, 53(3). Retrieved from <https://pdfs.semanticscholar.org/9bb1/fb90f14326a3a6eb1429deabef7e832373a1.pdf>
- Andreini, D. & Bettinelli, C. (2017). *Business Model Innovation: From Systematic Literature Review to Future Research Directions*. Cham: Springer. doi: 10.1007/978-3-319-53351-3
- Pastore, A., Battista, G., Frey, M., Grönroos, C., Haenlein, M., Hofacker, C. F., ... Matarazzo, M. (Eds.). (2017). *Business Model Innovation: From Systematic Literature Review to Future Research Directions*. Cham: Springer. doi: 10.1007/978-3-319-53351-3
- Aspara, J., Lamberg, J. Laukia, A. & Tikkanen, H. (2013). Corporate Business Model Transformation and Inter-Organizational Cognition: The Case of Nokia. *Long Range Planning*, 46(6), 459-474. doi: 10.1016/j.lrp.2011.06.001
- Aspara, J., Lamberg, J., Laukia, A. & Tikkanen, H. (2011). Strategic Management of Business Model Transformation: Lessons from Nokia. *Management Decision*, 49(4), 622-647. doi: 10.1108/00251741111126521
- Atlas. (n.d.). *Atlas de Radiación Solar, Ultravioleta y Ozono de Colombia* (Website). Retrieved from: <http://atlas.ideam.gov.co/visorAtlasRadiacion.html>

- Aurorasolarcar. (n.d.). *World Solar Challenge 1990* (Website). Retrieved from <http://www.aurorasolarcar.com/EventReports/1987-1999Campaigns/WorldSolarChallenge1990>
- Banco de la Republica Colombia. (n.d.). *London Interbank Offered Rate last 12 months*. Retrieved from: <http://www.banrep.gov.co/es/libor>
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99-120. Retrieved from: https://business.illinois.edu/josephm/BA545_Fall%202011/S10/Barney%20%281991%29.pdf
- Barth, H., Ulvenblad, P. [Per-Ola]. & Ulvenblad, P. [Pia]. (2017). Towards a Conceptual Framework of Sustainable Business Model Innovation in the Agri-Food Sector: A Systematic Literature Review. *Sustainability*, 9(9), 1-15. doi: 10.3390/su9091620
- Bidom, C. M. & Knab, S. F. (2018). The Three Roles of Business Models in Societal Transitions: New Linkages between Business Model and Transition Research. *Journal of Cleaner Production*, 178, 903-916. doi: 10.1016/j.jclepro.2017.12.198
- Blades, D., Ferreira, F. H. G. & Lugo, M. A. (2011). The Informal Economy in Developing Countries: An Introduction. *Review of Income and Wealth*, 57, 1-7. doi: 10.1111/j.1475-4991.2011.00457.x
- Bolton, R. & Hannon, M. (2016). Governing Sustainability Transitions through Business Model Innovation: Towards a Systems Understanding. *Research Policy*, 45(9), 1731-1742. doi: 10.1016/j.respol.2016.05.003
- Boons, F., Montalvo, C., Quist, J. & Wagner, M. (2013). Sustainable Innovation, Business Models and Economic Performance: An Overview. *Journal of Cleaner Production*, 45, 1-8. doi: 10.1016/j.jclepro.2012.08.013
- Bouncken, R. B. & Fredrich, V. (2016). Business Model Innovation in Alliances: Successful Configurations. *Journal of Business Research*, 69(9), 3584-3590. doi: 10.1016/j.jbusres.2016.01.004
- Casadeus-Masanell, R. & Ricart, J. E. (2010). From Strategy to Business Models and onto Tactics. *Long Range Planning*, 43, 195-215. doi: 10.1016/j.lrp.2010.01.004
- Chandler, J. D. & Vargo, S. L. (2011). Contextualization and value-in-context: How context frames exchange. *Marketing Theory*, 11(1), 35-49. doi: 10.1177/1470593110393713
- Chesbrough, H. & Rosenbloom, R. S. (2002). The Role of the Business Model in Capturing Value from Innovation: Evidence from Xerox Corporation's Technology Spin-Off Companies. *Industrial and Corporate Change*, 11(3), 529-555. doi: 10.1093/icc/11.3.529

- Chesbrough, H. (2007). Business Model Innovation: It's not just about Technology anymore. *Strategy & Leadership*, 35(6), 12-17. doi: 10.1108/10878570710833714
- Coca-Cola. (2017). *Our Business* (2017 Annual Review). Retrieved from: https://www.coca-colacompany.com/content/dam/journey/us/en/private/fileassets/pdf/2018/TCCCAR17_OpSum.pdf?utm_source=annual-review-2017.com&utm_medium=referral&utm_campaign=Annual_Report
- Colgate-Palmolive (2017). *Investing for Global Growth Winning with Focus* (2017 Annual Report). Retrieved from: http://files.shareholder.com/downloads/CL/6271590559x0x973871/3377469B-50C3-44FA-93B5-EFBB8B619FA9/Colgate-Palmolive_2017-Annual-Report.pdf
- DaSilva, C. M. & Trkman, P. (2014). Business Model: What it is and is not. *Long Range Planning*, (47), 379-389. doi: 10.12775/EiP.2015.031
- Demil, B. & Lecocq, X. (2010). Business Model Evolution: In Search of Dynamic Consistency. *Long Range Planning*, 43, 227-246. doi: 10.1016/j.lrp.2010.02.004
- Demil, B., Lecocq, X., Ricart, J. E. & Zott, C. (2015). Introduction to the SEJ Special Issue on Business Models: Business Models within the Domain of Strategic Entrepreneurship. *Strategic Entrepreneurship Journal*, 9, 1-11. doi: 10.1002/sej.1194
- Dent, J. (2011). *Distribution Channels: Understanding and Managing Channels to Market* (2nd Edition). London: Kogan Page.
- Desyllas, P. & Sako, M. (2013). Profiting from Business Model Innovation: Evidence from Pay-As-You-Drive Auto Insurance. *Research Policy*, 42(1), 101-116. doi: 10.1016/j.respol.2012.05.008
- Dinero. (2017). *Ranking de las tasas de interés más bajas para vivienda y consumo* (Website). Retrieved from <https://www.dinero.com/inversionistas/articulo/tasas-de-interes-mas-bajas-en-colombia/245574>
- Donaldson, T. & Preston, L. E. (1995). The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications. *Academy of Management Review*, 20(1), 65-91. doi: 10.2307/258887
- Doz, Y. L. & Hamel, G. (1998). *Alliance Advantage: The Art of Creating Value Through Partnering*. Boston: Harvard Business School Press.
- Doz, Y. L. & Kosonen, M. (2010). Embedding Strategic Agility: A Leadership Agenda for Accelerating Business Model Renewal. *Long Range Planning*, 43, 370-382. doi: 10.1016/j.lrp.2009.07.006
- Dubosson-Torbay, M., Osterwalder, A. & Pigneur, Y. (2002). E-Business Model Design, Classification, and Measurements. *Thunderbird International Business Review*, 44(1), 5-23. doi: 10.1002/tie.1036

- Dunn, D. T. & Thomas, C. A. (1994). Partnering with Customers. *Journal of Business & Industrial Marketing*, 9(1), 34-40. doi: 10.1108/08858629410053461
- Edvardsson, B., Tronvoll, B. & Gruber, T. (2011). Expanding understanding of service exchange and value co-creation: a social construction approach. *Journal of the Academy of Marketing Science*, 39, 327-339. doi: 10.1007/s11747-010-0200-y
- El Colombiano. (2018). *En 2017 aumentó el número de empresas creadas en Colombia*. Retrieved from: <http://www.elcolombiano.com/negocios/empresas/en-2017-se-crearon-323-265-empresas-en-colombia-LA8020805>
- Ennos. (n.d.). *Sunlight Pump Configuration Tool* (Company Website). Retrieved from <https://www.ennos.ch/configurator/>
- Ennos. (n.d.). *Vision* (Company Website). Retrieved from <https://www.ennos.ch/company/>
- Frow, P., McColl-Kennedy, J. R., Hilton, J., Davidson, A., Payne, A. & Brozovic, D. (2014). Value propositions: A service ecosystems perspective. *Marketing Theory*, 14(3), 327-351. doi: 10.1177/1470593114534346
- Garay, L. J., Barberi, F. B. & Cardona, I. C. (2009). *Impact of the US-Colombia FTA on the Small Farm Economy in Colombia* (Study on FTA between the U.S. and Colombia). Bogota. Retrieved from <https://www.oxfamamerica.org/static/media/files/colombia-fta-impact-on-small-farmers-final-english.pdf>
- George, G. & Bock, A. J. (2011). The Business Model in Practice and its Implications for Entrepreneurship Research. *Entrepreneurship Theory and Practice*, 35(1), 83-111. doi: 10.1111/j.1540-6520.2010.00424.x
- Gerring, J. (2012). *Social Science Methodology: A Unified Framework* (2nd Edition). Cambridge: Cambridge University Press.
- Elman, C., Gerring, J. & Mahoney, J. (Eds.). (2012). *Social Science Methodology: A Unified Framework* (2nd Edition). Cambridge: Cambridge University Press.
- Gingrich, J. A. (1999). Five Rules for Winning Emerging Market Consumers. *Strategy & Business*, 15. Retrieved from: <https://www.strategy-business.com/article/16583?gko=68e98>
- Gordjin, J. (2002). *Value-based Requirements Engineering: Exploring Innovative E-Commerce Ideas* (Dissertation, VU University Amsterdam, No. 2002-8). Retrieved from: https://www.cs.vu.nl/en/Images/J_Gordijn_25-06-2002_tcm210-258560.pdf

- Granada, L. (2011). *Estimación del Consumo básico de Agua Potable en Colombia* (master thesis). Universidad del Valle, Santiago de Cali. Retrieved from: <http://bibliotecadigital.univalle.edu.co/bitstream/10893/3682/4/CB-0449498.pdf>
- Grant, R. M. (2010). *Contemporary Strategy Analysis* (7th Edition). Chichester: John Wiley & Sons Ltd.
- Gronum, S., Steen, J. & Verreyne, M. (2016). Business model design and Innovation: Unlocking the Performance Benefits of Innovation. *Australian Journal of Management*, 41(3), 585-605. doi: 10.1177/0312896215587315
- Gulati, R. (1998). Alliances and Networks. *Strategic Management Journal*, 19(4), 293-317. doi: 10.1002/(SICI)1097-0266(199804)19:4<293::AID-SMJ982>3.0.CO;2-M
- Gulati, R., Nohria, N. & Zaheer, A. (2000). Strategic Networks. *Strategic Management Journal*, 21(3), 203-215. doi: 10.1002/(SICI)1097-0266(200003)21:3<203::AID-SMJ102>3.0.CO;2-K
- Hannon, M. J., Foxon, T. J. & Gale, W. F. (2013). The Co-Evolutionary Relationship between Energy Service Companies and the UK Energy System: Implications for a Low-Carbon Transition. *Energy Policy*, 61, 1031-1045. doi: 10.1016/j.enpol.2013.06.009
- Huijben, J. C. C. M., Verbong, G. P. J. & Podoyntsyna, K. S. (2016). Mainstreaming Solar: Stretching the Regulatory Regime through Business Model Innovation. *Environmental Innovation and Societal Transitions*, 20, 1-15. doi: 10.1016/j.eist.2015.12.002
- Instituto Nacional de Contadores Públicos [INCP]. (2016). *DANE presenta las cifras reales del campo colombiano*. (Website). Retrieved from <https://www.incp.org.co/dane-presenta-las-cifras-reales-del-campo-colombiano/>
- Jains. (n.d.). *The Company* (Company Website). Retrieved from <http://www.jains.com/>
- Jeanneret, K. (2017). *Submission for Social Innovations in Preventative Health for Human Settlements in South Africa* (Company Presentation for the South Africa Innovation Summit, ENNOS AG).
- Johnson, M. W., Christensen, C. M. & Kagermann, H. (2008). Reinventing Your Business Model. *Harvard Business Review*, 86(12), 50-59. Retrieved from: <http://eds.b.ebscohost.com/eds/pdfviewer/pdfviewer?vid=6&sid=0c3d9200-308b-4e93-a5e3-32fc47301b3a%40pdc-v-sessmgr01>
- Kogut, B. (2000). The Network as Knowledge: Generative Rules and the Emergence of Structure. *Strategic Management Journal*, 21(3), 405-425. doi: 10.1002/(SICI)1097-0266(200003)21:3<405::AID-SMJ103>3.0.CO;2-5

- Landau, C., Karna, A. & Sailer, M. (2016). Business Model Adaptation for Emerging Markets: A Case Study of a German Automobile Manufacturer in India. *R & D Management*, 46(3), 480-503. doi: 10.1111/radm.12201
- Linder, J. C. & Cantrell, S. (2000). Changing Business Models: Surveying the Landscape. (Working Paper). Accenture, Accenture Institute for Strategic Change. Retrieved from: http://www.businessmodels.eu/images/banners/Articles/Linder_Cantrell.pdf
- Loorbach, D. & Wijsman, K. (2013). Business Transition Management: Exploring a New Role for Business in Sustainability Transitions. *Journal of Cleaner Production*, 45, 20-28. doi: 10.1016/j.jclepro.2012.11.002
- Lusch, R. F. & Vargo, S. L. (2006). Service-dominant logic: reactions, reflections and refinements. *Marketing Theory*, 6(3), 281-288. doi: 10.1177/1470593106066781
- Macrotrends. (n.d.). *Crude Oil Prices - 70 Year Historical Chart*. Retrieved from <http://www.macrotrends.net/1369/crude-oil-price-history-chart>
- Magretta, J. (2002). Why Business Models Matter. *Harvard Business Review*, 80, 86-92. Retrieved from: <http://web.a.ebscohost.com/ehost/detail/detail?vid=9&sid=3dd4310c-2061-4875-b1b3-4150688f8be7%40sessionmgr4010&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#AN=6623782&db=bsu>
- Mahadevan, B. (2000). Business Models for Internet-based E-Commerce: An Anatomy. *California Management Review*, 42(4), 55-69. doi: 10.2307/41166053
- Mahajan, V. & Banga, K. (2006). *The 86 Percent Solution: How to Succeed in the Biggest Market Opportunity of the Next 50 Years*. New Jersey: Prentice Hall.
- Moore, T., Wind, Y. J., Abraham, S., Hall, R., Kanouse, G., Thurston, M. & Johnson, G. (Eds.). (2006). *The 86 Percent Solution: How to Succeed in the Biggest Market Opportunity of the Next 50 Years*. New Jersey: Prentice Hall.
- McDonald, M. & Dunbar, I. (2004). *Market Segmentation: How to do it, How to Profit from it*. Oxford: Elsevier Butterworth-Heinemann.
- Morris, M., Schindehutte, M. & Allen, J. (2005). The entrepreneur's business model: toward a unified perspective. *Journal of Business Research*, 58(6), 726– 735. doi: 10.1016/j.jbusres.2003.11.001
- Mprende. (2014). *Diez pasos para crear una empresa en Colombia*. Retrieved from: <http://mprende.co/legal/10-pasos-para-crear-una-empresa-en-colombia>

- Murthi, B. P. S. & Sarkar, S. (2003). The Role of the Management Sciences in Research on Personalization. *Management Science*, 49(10), 1344-1362. doi: 10.1287/mnsc.49.10.1344.17313
- Nenonen, S. & Storbacka, K. (2010). Business Model Design: Conceptualizing Networked Value Co-creation. *International Journal of Quality and Service Sciences*, 2(1), 43-59. doi: 10.1108/17566691011026595
- Osterwalder, A. (2004). *The Business Model Ontology: A Proposition in a Design Science Approach*. (Dissertation, HEC Lausanne). Retrieved from: http://www.hec.unil.ch/aosterwa/PhD/Osterwalder_PhD_BM_Ontology.pdf
- Osterwalder, A., Pigneur, Y. & Clark, T. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*. New Jersey: Wiley
- Osterwalder, A., Pigneur, Y. & Tucci, C. L. (2005). Clarifying Business Models: Origins, Present, and Future of the Concept. *Communications of the Association for Information Systems*, (16), 1-25. Retrieved from: <http://aisel.aisnet.org/cais/vol16/iss1/1>
- Our World in Data. (n.d.). *Trust: Interpersonal Trust Levels in Colombia compared to other countries*. Retrieved from <https://ourworldindata.org/trust>
- Pallavi, R. (2017). *Market Information Report: Colombia* (Report). Ontario: MaRS Advanced Energy Center. Retrieved from: https://www.marsdd.com/wp-content/uploads/2015/07/AEC_GG_COLOMBIA_2017_April_Final.pdf
- Pratap, S. & Quintin, E. (2006). The Informal Sector in Developing Countries: Output, Assets and Employment. *ResearchGate*. doi: 10.1093/acprof:oso/9780199548880.003.0018
- Petrovic, O., Kittl, C. & Teksten, R. D. (2001). Developing Business Models for eBusiness. *SSRN Electronic Journal*, 1-6. doi: 10.2139/ssrn.1658505
- Pinot de Libreros, M., Rojas, J. A. & Mora, C. A. (2013). *Medición del Turismo interno en Colombia: Experiencia y Retos* (3rd International Conference on the Measurement and Economic Analysis of Regional Tourism in Medellin). Bogota. Retrieved from: <http://www.eafit.edu.co/cec/congresos/move2013/papers/Medici%C3%B3n%20del%20turismo%20interno%20en%20Colombia%20experiencias%20y%20retos.pdf>
- Porter M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.

- Rappa, M. (2006). *Managing the Digital Enterprise: Business Models on the Web*. North Carolina State University, Managing the digital Enterprise. Retrieved from: http://home.ku.edu.tr/~daksen/mgis410/materials/Business_Models_on_the_Web.pdf
- Rayna, T. & Striukova, L. (2016). 360° Business Model Innovation: Toward an Integrated View of Business Model Innovation. *Research-Technology Management*, 59(3), 21-28. doi: 10.1080/08956308.2016.1161401
- Sarasini, S. & Linder, M. (in press). Integrating a Business Model Perspective into Transition Theory: The Example of New Mobility Services. *Environmental Innovation and Societal Transitions*. doi: 10.1016/j.eist.2017.09.004
- Schaltegger, S., Lüdeke-Freund, F. & Hansen, E. G. (2016). Business Models for Sustainability: A Co-Evolutionary Analysis of Sustainable Entrepreneurship, Innovation, and Transformation. *Organization & Environment*, 29(3), 264-289. doi: 10.1177/1086026616633272
- Sorescu, A., Frambach, R. T., Singh, J., Rangaswamy, A. & Bridges, C. (2011). Innovations in Retail Business Models, *Journal of Retailing*, 87(1), 3-16. doi: 10.1016/j.jretai.2011.04.005
- Stähler, P. (2002). Business Models as an Unit of Analysis for Strategizing. Proceedings of the International Workshop on Business Models (1st draft, unpublished). HEC Lausanne.
- Switzerland Innovation Park Biel/Bienne [SIP Biel/Bienne]. (2017). *Innovation, Infrastructure & Services*. (Brochure). Nidau-Biel.
- Taran, Y., Boer, H. & Lindgren, P. (2015). A Business Model Innovation Typology. *Decision Sciences*, 46(2), 301-331. doi: 10.1111/deci.12128
- Timmers, P. (1998). Business Models for ElectronicMarkets. *Electronic Markets*, 8(2), 3-8. doi: 10.1080/10196789800000016
- Tongur, S. & Engwall, M. (2014). The business model dilemma of technology shifts. *Technovation*, 34(9), 525-535. doi: 10.1016/j.technovation.2014.02.006
- Trading Economics. (n.d.). *Colombia GDP Growth Rate 2001-2018*. Retrieved from: <https://tradingeconomics.com/colombia/gdp-growth>
- Tuli, K., Kohli, A. K. & Bharadwaj, S. G. (2007). Rethinking Customer Solutions: From Product Bundles to Relational Processes. *Journal of Marketing*, 71(3), 1-17. Retrieved from: http://ink.library.smu.edu.sg/lkcsb_research/1055

- Webster, F. E. (1992). The Changing Role of Marketing in the Corporation. *Journal of Marketing*, 56(4), 1-17. doi: 10.2307/1251983
- Weill, P. & Vitale, M. (2002). What IT Infrastructure Capabilities are Needed to Implement E-Business Models?. *MIS Quarterly Executive*, 1(1), 17-34. Retrieved from: misq.org/ojs2/index.php/misq/article/download/22/16
- Weiller, C & Neely, A. (2013). *Business Model Design in an Ecosystem Context*. (Working Paper). Cambridge: University of Cambridge, Cambridge Service Alliance. Retrieved from: <https://cambridgeservicealliance.eng.cam.ac.uk/resources/Downloads/Monthly%20Papers/2013JunepaperBusinessModelDesigninEcosystemContext.pdf>
- Windler, K., Jüttner, U., Michel, S., Maklan, S. & Macdonald, E. K. (2017). Identifying the Right Solution Customers: A Managerial Methodology. *Industrial Marketing Management*, 60, 173-186. doi: 10.1016/j.indmarman.2016.03.004
- Winter, S. G. & Szulanski, G. (2001). Replication as Strategy. *Organization Science*, 12(6), 730-743. doi: 10.1287/orsc.12.6.730.10084
- Worldsolarchallenge. (n.d.). *Route Map of the Race* (Official Website). Retrieved from https://www.worldsolarchallenge.org/event-information/route_map
- XE Money Transfer. (n.d.). *Tablas de divisas de XE: USD a COP*. Retrieved from <https://www.xe.com/es/currencycharts/?from=USD&to=COP&view=5Y>
- Zajac, E. J., Kraatz, M. S. & Bresser, R. K. F. (2000). Modeling the Dynamics of Strategic Fit: A Normative Approach to Strategic Change. *Strategic Management Journal*, 21(4), 429-453. doi: 10.1002/(SICI)1097-0266(200004)21:4<429::AID-SMJ81>3.0.CO;2-#
- Zott, C. & Amit, R. (2007). Business Model Design and the Performance of Entrepreneurial Firms. *Organization Science*, 18(2), 181-199. doi: 10.1287/orsc.1060.0232
- Zott, C. & Amit, R. (2010). Business Model Design: An Activity System Perspective. *Long Range Planning*, 43, 216-226. doi: 10.1016/j.lrp.2009.07.004
- Zott, C., Amit, R. & Massa, L. (2010). *The Business Model: Theoretical Roots, Recent Developments, and Future Research* (Working Paper WP-862). Barcelona: University of Navarra, IESE Business School.