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SMALL AND MEDIUM ENTERPRISES COMPETITIVENESS AND INTERNATIONALIZATION FIELD LAB: INTERNATIONALIZATION PLAN FOR COMPANY BETA – IN-DEPTH MARKET ANALYSIS OF BOTSWANA

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Abstract

Deciding to internationalize in a new market is a vital choice for the evolution of the company in many aspects, requiring an intensive study of the potential of the foreign market in which it decides to develop its commercial activity. The first phase of international market selection has led Company Beta to consider Botswana as a candidate for internationalization. But because of further analysis, Rwanda was seen as the best target market. In the final stages of the project, an analysis on the most suitable entry mode, the development of a marketing plan and an examination of the financial viability of the internationalization were conducted.

Keywords: Small and Medium Enterprises, International Market Selection, Business Development, Entry Mode Selection, Lightning Protection Industry, Botswana, Rwanda.

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1. Introduction

The internationalization process is a risky endeavor for most enterprises due to the needed commitment of resources and capabilities, along with exposure to diverse external contexts. Hence, to mitigate failed endeavors, companies should initially conduct a thorough analysis on the International Market Selection (IMS), as the chosen market can significantly impact a company's competitiveness and profitability (He and Wei 2010). However, selecting the desired target is only a part of the success of the international venture, as it also involves the establishment of a cohesive international business strategy to surmount market barriers and exploit opportunities to reach a competitive advantage (Ricart, et al. 2004). Due to the lower pool of resources, labor, and capital, Small and Medium-sized Enterprises (SMEs) often face increased challenges and risks when pursuing a geographical expansion to achieve sustained growth beyond their home market. Overall, this predicament parallels the situation faced by Company Beta, as, in Portugal, the Lightning Protection Industry (LPI), wherein Beta holds expertise, displays relatively limited market scale and growth, while facing heightened price competition, mainly due to globalization. The decrease in communication costs allowed companies to have more fragmented supply chains in various countries, leveraging on lower-cost inputs, outsourcing production, and reach efficient scaling of their operations to cater to a higher number of potential customers (Bang and Markeset 2012).

Thus, this report aims to guide the company through a successful internationalization venture via an analytical approach. Initially, a strategic analysis of the company and the macroenvironment will be conducted to identify potential trends that could offer growth opportunities or pose threats to Beta's performance. And, based on its existing resources and capabilities, the readiness to internationalize a key product of its portfolio will be evaluated. Then, the subsequent step involves choosing the most suitable target markets for the company, a process which will entail statistical comparisons among countries based on macroenvironment

variables relevant to the industry and Beta's business activities; afterwards, five of the most promising markets will be in-depth analyzed, and the most appropriate market from Beta's view will be selected by weighting the tradeoff amid higher financial returns and higher resource commitment, while considering the external factors previously identified in the country analysis alongside with Beta's current conditions. Moreover, to ensure a smooth operational process, a marketing plan will be devised, and given the inherent risk associated with the internationalization process, its financial viability will be assessed, taking into consideration various scenarios that Beta may encounter, ultimately ensuring this project's robustness.

2. Literature Review

2.1. Literature Review on International Entry Mode Selection, Export vs FDI Modes (Eduardo Ureña – 56078)

The significance of market entry strategies cannot be overstated, as they often constitute a pivotal competitive advantage and significantly shape a company's performance in the target country (Woodcock, Beamish and Makino 1994). Addressing this topic involves drawing insights from Pan and David's hierarchical perspective (2000), which outlines how managers assess entry options, encompassing non-equity and equity modes at the primary level. Concurrently, a prevailing discourse exists regarding the level of commitment required to enter a new market, ranging from low-resource to high-resource commitment, an aspect underscored by Ripollés, Blesa and Monferrer (2012). This multifaceted approach sheds light on strategic considerations for successful market entry. Anderson and Gatignon (1986) propose that higher equity in entry modes correlates with greater control. Joint Ventures (JVs) with full or majority ownership exhibit the highest level of control, while contracts with minimal equity offer the least. This paper aims to contrast two entry modes: non-equity, low-resource commitment (exporting) and high-resource commitment equity mode, (FDI) (Pan and David 2000). Notably, globalization has expanded the capacities for both export and FDI (Girma, Kneller and Pisu

2005). Exploring this debate involves examining various authors' arguments both in favor of and against these modes. Dunning's OLI paradigm (2014) strongly advocates for FDI as the superior method for internationalization due to its Ownership, Location, and Internalization advantages. However, despite the lower costs and risks associated with direct or indirect exports (Hill, Hwang and Kim 1990), control remains notably low, leading to potential dissemination risks. On the other hand, Hennart (1988) supports FDI over exporting, citing the example of an aluminum smelting firm with operations spanning Europe and Latin America, showcasing significant asset specificity issues. FDI resolves these challenges by internalizing operations, thus effectively coordinating activities and reducing associated risks. However, Krishna's study (2004) presents a more nuanced perspective, suggesting a moderate link between asset specificity and entry mode selection. It implies that firms, regardless of asset specificity, tend to favor full control when facing low costs or possessing high integration capabilities. However, when confronted with high-cost scenarios, less asset-specific firms tend to opt for more conservative alternatives (Krishna, Sanjeev and Chekitan 2004). All these arguments may lead us to understand that the decision to choose FDI over exporting is logical and that it is mainly a question of the availability of sufficient economic resources to carry it out, as is the case in the model of Helpman, Meltiz and Yeaple (2004) who segment firms into three categories: (1) Enterprises with limited productivity focus solely on the domestic market due to potential losses associated with internationalization. (2) Businesses with moderate productivity engage in exporting activities. (3) High-productivity firms opt for Foreign Direct Investment (FDI), reinforcing this statement. While Dumming, Hill, and Helpman's arguments suggest a company's initial choice between equity or non-equity commitments for market entry, alternative models like the Uppsala Internationalization model by Johanson and Wiedersheim-Paul (1975) propose a different trajectory. This model views internationalization as a gradual expansion of a firm's operations in a target country, building upon practical experience and

knowledge (Johanson and Vahlne 1977). It does not classify commitment levels but emphasizes starting with a low commitment and gradually increasing it in defined steps. Therefore, Campa and Guillén (1999) similarly suggest that exporting serves as an initial stage, often followed by the internalization of exporting via equity. However, despite these models, empirical studies challenge the Uppsala approach, revealing that companies often deviate from the prescribed sequential steps. Real-world dynamics, where executives must react to unpredictable internal and external factors, make it challenging for firms to systematically adhere to these models (Crick and Crick 2014). Research like Vendrell-Herrero et al. (2018) highlights FDI's advantages in foreign market entry. It shows how specific cultural factors can hinder product reception abroad. Focusing on digital industry firms, the study explores how FDI addresses cultural and geographical concerns. Establishing a local presence through FDI helps overcome brand and origin challenges, enhancing consumer trust in the services market (F. Vendrell-Herrero, et al. 2018). As a conclusion to this literature review it can be drawn that most authors support FDI over exports due to the control it provides, the greater access to resources, and the proximity to the market in which a firm intends to expand. However, carrying out any type of equity entry requires a high commitment of resources that not all companies may be capable of facing from the outset.

3. Research Methods

To undertake a project as extensive as the internationalization of an SME, a comprehensive and diverse array of information is essential. This encompasses data about the company itself, its origin country, and market specifics. Consequently, such multifaceted endeavor also involves procuring data that serves as indicators to evaluate potential destination countries, creating the need for a deep dive into comprehending market entry conditions, employing varied strategic approaches, assessing market attractiveness, analyzing local and international competition, and

developing comprehensive marketing and financial estimates tailored to the selected entry country.

The methodology applied throughout the project is divided into quantitative and qualitative methods. In the quantitative realm, Chapter 5 primarily focused on market selection. The methodology adopted for this project section was drawn from Cavusgil, Kiyak and Yeniyurt's (2004) example of country ranking and clustering. This involved selecting indicators based on economic development and internal stability, as outlined in their work. The framework for designing tables and standardizing indicators also drew inspiration from their methodology. Data was primarily found on websites or platforms of organizations such as the World Bank, OECD, governmental pages, national statistics institutes, Statista, Knoema, Credendo, etc. In these cases, priority was given to the quality of the source when selecting the data, and the most updated data possible. Nevertheless, in cases where difficulties have been encountered in finding any type of information, proxies and estimates derived from secondary data or lower-quality data have been used, referring to data similar or close to the object of study and using it as a guide. In terms of the study and standardization of information, it was crucial to implement standardization techniques due to the wide range of sources providing data with varying scales and ratios. Standardization was necessary to ensure coherence and comparability across these diverse data sets, and, for this purpose, SPSS statistical software was used. However, this has not been used to resolve missing data, as priority has always been given to obtaining information from other sources, or estimation using proxies. Additionally, country clustering relied on a hierarchical method post-selection of vital indicators for the company. This clustering process was conducted through SPSS, enabling a comparison of results from both methodologies, ultimately combining them for the country selection process (Cavusgil, Kiyak and Yeniyurt 2004). On the other hand, concerning the qualitative method used, Company Beta has been the main qualitative source and has played a crucial role in this project, providing the

basis on which the company's profile, management, operations, and finances have been developed, and on which reliance has been placed for the study of competitors and for their preferences when selecting geographic areas, strategy, segments, and key macro-indicators. Having the company as a crucial source has allowed an understanding of a specialized niche sector. This information has been conveyed through documents, tables, and reports. Additionally, through interviews, meetings, and document analysis, with the General Manager. Notably, consistent feedback from the company ensured that they were regularly updated on the remarkable progress achieved throughout the process. This collaboration began in September and continued bi-weekly, using Teams as the primary platform for meetings. However, communication remained constant through email, allowing for additional insights and comments, when necessary, thus enriching the research process until its completion. Combining these with the quantitative methods used has provided sufficient information to complete this work.

4. Strategic Analysis of the Company's Situation

4.1. Firm Overview and Project Background

Profile and management

Beta is a family micro-enterprise and single-member limited liability company founded in 2012 in Portugal with 100% ownership held by its founder. Headquartered in […], Company Beta, within the LPI in Portugal and with a subsidiary in […], has been carved as a professional assembler and installer of Lightning Protection Systems (LPS), Surge Protection Devices (SPD), Intercom and Nurse Calling Systems. Over the last decades, it has been pursuing its mission of exploring new horizons and redefining strategic partnerships to become a market leader by offering disruptive and adaptable solutions that cover a wide range of sectors, from oil-related energy to tertiary services, encompassing both Low and High Voltage systems, with

a strong commitment for quality control and compliance with mandatory governmental regulations and health & safety rules.

Nowadays, and to comply with such demanding operations throughout the years, the company is composed of its founder, a Head of Finance, a Head of Sales leading two field agents, and an Administrative/HR manager; the remaining departments of Marketing, Legal & Compliance, and Technology are outsourced (see Appendix 1). The founder counts 30 years of experience in the field of electrical and telecommunications engineering and specializes in critical areas of electrical safety. Furthermore, the founder, who currently holds the position of General Manager (GM), has been an active member of the Electrotechnical Committee 37/81 for 24 years, contributing to the development of industry standards, and an active member of both the Ordem dos Engenheiros of Portugal and […], underscoring his dedication to professional development and leadership within the industry. Also, as a certified trainer, he has played a pivotal role in disseminating knowledge and expertise across this industry by conducting numerous training sessions and has co-authored the Portuguese technical guide for the IEC 62305 standard and NT 29 ANEPC. In 2013, the company opened a subsidiary in […] following previous successful exports to the country and a greater exposure to its business environment through international fairs such as FILDA, which allowed the founder to perceive a good business opportunity for a sustainable expansion.

Product/Business Portfolio

Company Beta focuses primarily on LPS and SPD, complementing its expertise in a broad spectrum of electrical installations and maintenance. The company markets its customized products and services mainly in Portugal for both B2B and B2C segments, occasionally acting as a supplier by directly selling components to end customers or businesses in the sector. Overall, Beta's most profitable segment is the B2B, dominating around 88% of their revenue, as this segment benefits from industries operating under strict regulations mandating lightning

protection. Conversely, representing 2.22% of the firm's income, the B2C segment remains notably small as it solely reaches private clients owning specific infrastructures in condominiums and communities of neighbors requiring LPS installations and their maintenance. Employing components from various suppliers in Europe and beyond, Beta assembles its products to ensure high-quality final offerings. While specializing in LPS and SPD, the company excels in other product/service ranges, as in maintaining and upgrading stations and substations, grounding, welding, and low-voltage electrical installations, encompassing diverse systems, such as underground distribution, power generation, lighting, uninterruptible power supply (UPS) systems, and communication infrastructure (nurse call, intercoms, and public speaker systems in both IP and analog formats). Moreover, they cover subterranean ductwork, vault installations, and renewable energy solutions like photovoltaic and micro wind turbine installations. Besides, the company offers training, particularly for its technicians and operational staff so they can perform preventive electrical engineering audits, inspections, and maintenance, which include earth testing, thermography, soil resistivity testing, power quality analysis, battery testing, and inspections of grounding and lightning protection systems.

Operations, Positioning, and Strategy

A company's success is intricately tied to its operations, positioning, and strategic choices. Operations management literature highlights the pivotal role of manufacturing units in leading firms to secure competitive edge, by establishing and executing operational priorities effectively (Díaz-Garrido, Martín-Peña and Sánchez-López 2011). Simultaneously, positioning a company or product uniquely in the market allows consumers to differentiate and choose based on perceived value (DiMingo 1998). Consequently, shaping the strategic direction a firm takes within the market to attain success in the industry.

Firstly, Company Beta's **operations** follow a cyclical process wherein the company sources components and systems from various suppliers, assembles them under its own brand, after conducting a detailed infrastructural risk assessment of the purchased request for LPS; for bigger infrastructures, the installation may integrate multiple systems. As Beta's primary strategy revolves around customization, the company adopts a consultative approach when engaging with clients, offering diverse budget options tailored to system quality and specific needs. Notably, this customization does not compromise the compliance of these products with strict regulations, such as IEC 62305, specifying the installation distance for these products within buildings across Europe, alongside with UNE EN IEC 62561 and UNE 21186, occupational safety rules that serve as critical drivers for companies to install LPS. This operations management involves planning, supply chain management, designing, installation, and an after-sales revisions service with rigorous adjustments, and replacements to ensure system safety and compliance with country-specific legislation. Furthermore, regular inspections and maintenance, as mandated by UNE21186, are key in averting deviations caused by either weather conditions, mishandling, or facility expansions that can impact the installed LPS (Aplicaciones Tecnológicas 2023). Therefore, the company places its **strategy** (further analyzed) on differentiation over pricing, to concentrate efforts on crafting a unique and distinctive product or service and distinguish itself from market competitors.

Hence, the assessment of market players and Beta's **positioning** must consider the pricing and the portfolio diversity, to better understand where Beta positions itself in the competitive landscape by capitalizing on its flexibility and adaptability to meet customer needs. First, Company Beta does not offer the most competitive prices due to fixed personnel costs and variable costs, maintaining a significant stock of materials, and providing a wide variety of customized products, unlike some competitors with streamlined approaches of selling a single type of product that result in greater efficiency and lower costs, making it possible to settle a

more competitive price (see Figure 1). This positioning analysis covered various competitors in the industry, encompassing companies focused on installations, revisions, and wholesaling operations. Likewise, this analysis is mainly based on GM's experience in the Portuguese market, identifying its main competitors, and providing the most relevant information not available in most cases on the companies' websites. Notably, **[…]** leads the market with an 80% share by offering an extensive span of all-weather products, and installation and revisions solutions. Despite higher prices and not manufacturing the systems, its substantial size and significant investment in marketing make its pricing a benchmark for competitors. Secondly, **Aplicaciones Tecnológicas S.A.**, a multinational Spanish company, offers a diverse range of products at a relatively low price by manufacturing and exporting them from Spain, minimizing its costs. However, the products installations, revision and maintenance are not executed by the company itself, but through arranged third-party entities. Conversely, **[…]**, a smaller and less established firm in the market, provides diverse products and installation services, but for a moderately higher prices. Moreover, **[…]** and **[…]** are similar wholesalers with limited installation and other services; and, even though, […] offers lower prices, one of Beta's suppliers collaborates with […] in a specific product brand. Focusing on the wholesaling operations, **[…]** appears as a medium price company with a large number of customers, even though they do not do installations or other services. Similarly, emerges **[…]** with a good market presence in terms of sales with the cheapest price by importing the products from China and India, and then rebranding and selling them as their own. Lastly, **[…]** stands out as the bigger wholesaler in Portugal, since they are suppliers of the majority of wholesalers and distributors, indirectly operating in the country

Figure 1: Positioning Map of players in the Portuguese LPI

through partnerships with other companies, enabling them to offer a complete catalog of products in the market. Finally, **Company Beta**, comparing to these players, and considering its GM and industry knowledge, is positioned accordingly in Figure 1, revealing a company offering a diversified portfolio with a pricing between the industry giants […] and Aplicaciones Tecnológicas S.A. Consequently, the harsh competition faced by Beta shapes its strategic approach. As stated, previously, the company follows a differentiation strategy to bolster its market share and augment client retention in both B2B and B2C, to consequently increase its sales and achieve financial stability. As Beta struggles with size and financial constraints, it diligently reviews its results in Portugal and **[…]**, prioritizing the retention of qualified suppliers and adherence to regulatory standards. And, in response to unproductive market penetration efforts, it has shifted its focus towards market development, already exemplified by its venture into **[…]**, as a way to overcome scalability limitations within the domestic market and pursue sustainable growth (see Figure 2).

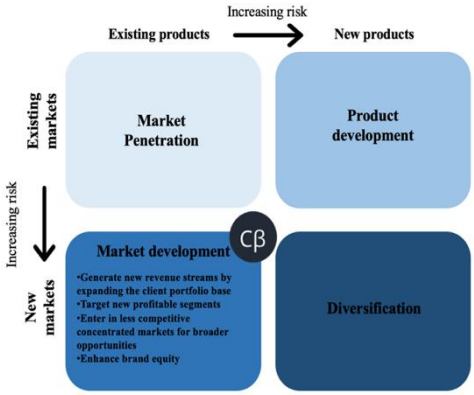


Figure 2: Ansoff Matrix

End-User Product/Service to be internationalized

Company Beta has strategically defined LPS as the end-user product to internationalize, given the adherence of these systems to safety regulations and standards implemented across most countries. Presently, the company holds a 5% market share in Portugal and approximately 5 to 10% in **[…]**, engaging significantly in both the distribution and direct sales of LPS materials through a comprehensive spectrum of designing, installing, and providing after-sales services for these systems, making it Beta's main product of expertise, and one of the most sold products. The LPS serves the critical function of attracting ionized lightning strikes from the air and securely conducting the discharge to the ground, ensuring a controlled pathway for high-voltage

lightning dissipation, effectively mitigating potential risks of damage (Electrical Engineering Portal n.d.). A standard LPS comprises essential components such as a lightning rod, conductor cables, grounding connections, and grounding devices, but in Beta's case, the company specializes in offering Active Lightning Protection (ALP) systems, differing from the traditional ones by incorporating an active lightning rod. So, this specialized system responds to electromagnetic field increases that occur when a storm approaches (ZANDZ n.d.), making it even more reliable. Furthermore, in addition to the end-user product earmarked for internationalization, the installation and maintenance services of these systems will be part of the project's international scope. As stated, larger infrastructures require more LPS, with significant projects typically demanding at least five systems, resulting in prices ranging from 40 to 60 thousand euros, and the services pricing depends on segment and type (see Table 1).

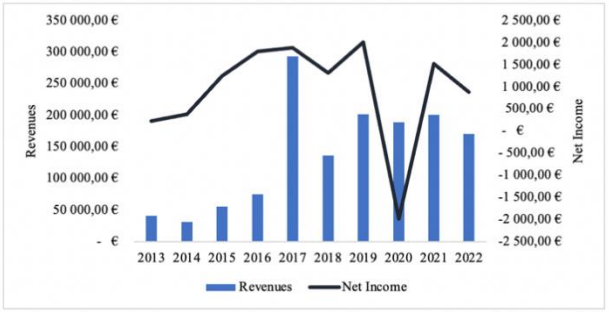
Company Beta's Pricing	B2B	B2C
Installation	15 000 €	7 500 €
Maintenance	3 500 €	1 000 €

Table 1: Company Beta's Services Pricing per segment

Financial Overview

The subsequent section reviews Beta's financial performance from 2013 until 2022. It evaluates profitability, and liquidity and solvency indicators of the last three years while reviewing the evolving cost structure to gauge the company's financial robustness. It is noteworthy that this analysis concentrates solely on Beta's operations in Portugal. Graph 1 depicts the revenue's fluctuating pattern over the years, showing a substantial increase from 2016 to 2017, followed by a notable decrease in 2018. However, even though it recovered strength on the following year, 2020 was marked by a significant downturn with a negative net income (see Graph 1) with a loss of around €2 000. The GM attributed this decline to the impact of the Covid-19 pandemic which greatly affected its sales, which suffered from a notable scarcity in project

requests. Yet, this shows that the pricing structure of these projects generates a considerable revenue range between €10 000 to €25 000 (see Graph 1) contingents upon the number of systems required for installation (which was not disclosed by Beta), i.e., a variation in the number of projects can fluctuate revenues. Moreover, the company faces relatively small profit margins, ranging between 0.5% and 2.4% of the revenue, with an average of 0.92%, depending on the year (Table 2), which indicates that there are high costs, either related to materials and personnel. Consequently, when studying Beta's **cost structure**, the cost of materials and components represent the most significant portion of the firm's expenses (see Table 3) and has been increasing over the years, in line with the company's growth. As presented in the table, this type of cost almost doubled from 2020 to 2021, showing that these variations are influenced by the preceding year's stock levels, which are a consequence of the company's retail operations and the necessity to maintain adequate materials in anticipation of subsequent client requests. Too, the cost of personnel has risen as the GM is no longer working alone. Meanwhile, costs related to specialized activities (services provided by third parties) have shrunk due to internalizing operations and reducing the cost of the external services expenses (Table 3). Additionally, it is crucial to conduct a Ratio Analysis as it provides an outlook of Beta's financial health, and it will aid in formulating a more realistic strategic plan aligned with the company's current reality and internationalization objectives.



Graph 1: Earnings Trend between Revenue and Net Income

Profit Margin	
2013	0,60%
2014	1,20%
2015	2,20%
2016	2,40%
2017	0,60%
2018	1%
2019	1,00%
2020	-1,10%
2021	0,80%
2022	0,50%
Average	0,92%

Table 2: Company Beta's Profit Margins

	Cost Structure			
	Cost of Materials	Specialised Works	Employees	Total
2013	€ -	€ 34 624,09	€ -	€ 34 624,09
2014	€ 7 130,60	€ 19 151,85	€ -	€ 26 282,45
2015	€ -	€ 49 455,72	€ -	€ 49 455,72
2016	€ 31 258,56	€ 34 149,08	€ -	€ 65 407,64
2017	€ 53 666,88	€ 228 091,79	€ -	€ 281 758,67
2018	€ 68 216,55	€ 45 171,68	€ 11 001,15	€ 124 389,38
2019	€ 73 534,87	€ 96 286,27	€ 20 559,98	€ 190 381,12
2020	€ 77 097,93	€ 79 038,80	€ 27 634,55	€ 183 771,28
2021	€ 143 852,91	€ 26 799,19	€ 26 150,04	€ 196 802,14
2022	€ 95 684,94	€ 54 295,95	€ 14 705,03	€ 164 685,92

Table 3: Company Beta's Cost Structure

Therefore, to understand the financial stability and risk exposure before Beta enters a new market, the Liquidity and Solvency Ratios will be measured. Firstly, measuring the firm's liquidity will indicate its ability to pay its short-term obligations, showing its margin of safety. The results presented in Table 4 reveals that Beta could face challenges meeting short-term obligations as both ratios have been below 1 in recent years. This situation is attributed to their narrow profit margin and the necessity to maintain certain stock levels of components to meet the fluctuating demand in the niche market where Beta has limited market share. Additionally, it is also useful to assess Beta's ability to meet its long-term debts through the solvency ratio's analysis. In terms of solvency the Debt to Equity and Debt Ratios suggest a decrease in financial leverage (see Table 5), as the decreasing trend of the Debt to Equity Ratio indicates that a smaller portion of the company's assets is funded by debt, demonstrated by its values nearing 1, signifying a lower financial risk associated with debt obligations. And the Debt Ratio indicates a consistent proportion of assets financed by debt over the years. However, upon assessing the EBITDA-to-Interest Coverage Ratio, it indicates a reduction in the company's ability to cover interest expenses with its available earnings. Overall, Beta managed to improve its debt structure, which is highly important due to its financial constraints, but, even though these values have been reasonably favorable, there has been a gradual emergence of difficulties in covering interest expenses over the past three years. So, the company should be cautious about these values and be prepared for possible unforeseen circumstances.

Liquidity Ratios	2022	2021	2020
Current Ratio	0,434	0,416	0,453
Quick Ratio	0,275	0,188	0,086

Table 4: Liquidity Ratios Results

Solvency Ratios	2022	2021	2020
Debt to Equity Ratio	1,48	1,90	2,09
Debt Ratio	0,91	0,92	0,93
EBITDA-to-Interest Coverage Ratio	11,14	16,01	70,73

Table 5: Solvency Ratios Results

4.2. Market/Industry Analysis

To understand the company's current strategic position and the threats and opportunities which may contribute to its change, an analysis of its external environment should be carried out (Hitt,

Ireland and Hoskisson 2020) inserted in, the attractiveness, trends and success factors of the firm's industry and the home market's advantages.

PESTEL

The initial focus was directed towards assessing, through a PESTEL analysis, the potential impact of current macroenvironmental trends on the LPI with a special emphasis on the Portuguese political, economic, social, technological, environmental, and legal dimensions.

Regarding political trends, despite longstanding trade relations with China as a significant import partner (OEC n.d.), Portugal is currently reassessing these ties to reduce its dependency (Sheridan 2023). Hence, this can result in a potential decrease in the supply of LPS components from lower-cost Chinese producers, alleviating some competition faced by Beta in Portugal, and prompting firms in Portugal to look for other suppliers in Europe. Moreover, Portugal's government is increasingly focused on improving innovation and productivity among SMEs through business assistance contests promoted by IAPMEI, a Portuguese agency designated by Agência para a Competitividade e Inovação. These contests, such as Portugal 2030, aim to fund investments through fiscal incentives, and tailored technical development sessions (IAPMEI n.d.). Subsequently, it will help ease the tax burden faced by most companies in Portugal since the corporate tax rate stands at 21% and peaks at 31.5%, one of the highest in the OECD. Yet, small companies with a taxable profit under €15 000 benefit from a reduced corporate tax rate of 17%, although still being a significant barrier to their growth ambitions (Tax Foundation n.d.; Garrigues 2018). In terms of economic trends, the current economic uncertainty is leading to a decline in short-term raw material prices, particularly copper and aluminum, essential materials to build LPS components (Wang 2023; Adams 2023), providing producers with a short-term safety margin and a lower cost structure. Moreover, interest rates are expected to remain high (Canepa and Koranyi 2023), potentially decreasing the corporate investments and the population's purchasing power, which can slow LPI's growth and rise price competition.

Nonetheless, the Portuguese economy seems to be recovering from the harsh effects of the pandemic (Muggenthaler, Schroth, and Sun 2021), showing an expected real GDP annual growth of 6.8% for 2023, almost double the Euro Area average (Trading Economics n.d.), which is propelled by increased FDI flows ($8 billion in 2021), resultant from the government commitment to reducing bureaucracy, simplifying taxation processes, and fostering the development of logistics and telecommunication infrastructure (Lloyds Bank 2023). However, Portugal still holds a moderate innovator status, diverging from the EU's performance, due to weaknesses in venture capital expenses, and low productivity levels (Hollanders, Es-Sadki, and Khalilova 2023). Labor productivity remains significantly below the OECD average, especially in smaller companies, owing to fewer funds to invest in resources like advanced software (Correia 2022). Lastly, late payments in B2B deals involving SMEs are prevalent in Portugal, causing liquidity concerns for most enterprises (European Commission 2023), potentially hindering companies from undertaking advantageous projects.

On the social front, consumers and employees increasingly prioritize ESG commitments by companies (PwC 2021). Particularly post-pandemic, there is a heightened consciousness regarding consumption patterns, emphasizing more prudent spending habits (Ferreira 2020). Therefore, establishing a reputable and reliable brand with controlled prices will appeal the Portuguese B2C segment, while corporate clients prioritize operational improvements over benefits of protection from lightning strikes, resulting in a lower willingness to pay for industry products (Nagle and Müller 2017). **Technology-wise**, the increased usage of videoconference platforms enables cost-effective management of target market operations and convenient negotiations with potential partners (Reim et al. 2022). This trend is anticipated to rise in Portugal due to improvements in bandwidth, granting the 17th fastest Internet speed in the world (Statista 2023; Fair Internet Report n.d.). Furthermore, the development of smart homes interconnected via the internet increases the risk of lightning-induced damage to network

equipment, potentially driving future demand for lightning protection systems in the B2C sector (Technavio 2021), albeit likely in the long term due to slower adoption of smart homes in Portugal, primarily due to associated costs and lower disposable income (Statista 2023). Environmentally, predictions indicate a 12% increase in lightning strikes for each degree increase in air temperature due to global warming (Romps et al. 2014), impacting Portugal as well. Also, the escalated demand for conductive metals such as copper and aluminum, driven by the transition to renewable energies, pressures the development of new mines, potentially raising pollution levels in surrounding communities. Thus, ensuring sustainable metal sourcing aligns with the preferences of the increasingly ESG-conscious consumers (Scheyder 2023; Uteuova 2021). Finally, in the legal environment, Portuguese regulation on LPS adheres to European and International standards (Aplicaciones Tecnológicas 2019), enabling companies in Portugal to diversify their sourcing across various European countries without breaching legislation. However, Portuguese labor legislation has also become stricter, requiring specific training for technicians to register companies under the National Authority for Emergency and Civil Protection (Aplicaciones Tecnológicas 2022). Moreover, the increased adoption of International Electrotechnical Commission standards, the basis of Portuguese standards within the industry, in multiple countries eases product internationalization (IEC n.d.).

Porter's Five Forces

The lightning protection industry thrives on innovative solutions that safeguard infrastructure development (Khandade 2023). Hence, companies operating within this sector in Portugal have made substantial contributions, providing a diverse range of products and services that comply with mandatory regulations and meet international and national industry standards. Despite its importance, this industry remains relatively niche in Portugal, resulting in limited available information, which highlights the vital role market players hold as primary sources of knowledge about this field. So, conducting a Porter's Five Forces Analysis becomes pivotal to

understand the five competitive forces that shape the industry's attractiveness (Dobbs 2014, Hitt, Ireland and Hoskisson 2020). In Portugal, this industry is characterized by **high rivalry among competitors**, yet with little differentiation among them, making the buyer view the offerings as commodities due to the uniform quality, installation, and maintenance across the market and leading to low switching costs, being the maintenance for the existing solutions the only barrier to change this intensity, which fosters a diminished degree of brand loyalty among clients. Also, most projects are granted through public or private contests, leading companies to compete intensely in terms of price. Secondly, companies depend on the suppliers to have the innovative products that comply with standards, making backward integration very unlikely; and, especially for active LPS, there is a relatively low number of satisfactory suppliers worldwide of its components, making them critical for the companies' sales success, which creates high switching costs for the industry players, and shows a greater suppliers' control over negotiations and pricing. Furthermore, as some of the suppliers also perform other services such as installation and maintenance in their home markets, there is a relevant threat of forward integration for the industry since they possess a certain extent of expertise in the area. But, given the product-specificity, most of the suppliers' products are only purchased by industry players, making **the bargaining power of suppliers moderate to high**. Similarly, **the bargaining power of buyers is moderate to high** since, as aforementioned, their switching costs are low, and a client's project is a significant share of a company's revenue in this industry. However, given the mandatory regulation for LPSs in most infrastructures, and the non-credible threat of forward integration by customers, as to operate in the industry there would need to gain a high degree of expertise and acquire the needed capabilities, their bargaining power decreases. Oppositely, **the threat of new entrants is moderate to low** primarily due to the small number of available suppliers, which already have established deals with existing brands, decreasing the access to supply channels. Also, there are entry-barriers for new entrants that

aim to produce their own solutions, such as the unlikeliness of achieving economies of scale, as the market trends leans toward product customization for each player, and the strict compulsory standards that products must follow, resulting in a high entry-deterring price subsequent of asset specificity, and high capital and R&D investments requirement. In addition, the constant progress of Artificial Intelligence (AI), robotics, and the Internet of Things (IoT) are also major growth factors for this industry, since these tools allow easier access to production facilities and warehousing at a lower price, attracting new entrants that focus their strategy on offering innovative equipment and technologies (Precedence Research 2023). Lastly, **the threat of substitute products** is particular within this industry, highlighting its niche nature. Even though, buyers face low switching costs, there is no type of alternative system that can offer the same specific protection of a LPS with equal or superior performance for a lower price, without compromising quality. Ultimately, this industry in Portugal typifies a niche sector with intense competitive forces, making it an appealing industry for companies equipped with resources and innovative capabilities to navigate its intense market dynamics.

Consumer Trends and Forecasts

Trend analysis and forecasting are critical in project preparation as they allow companies to capture the overall industry development pattern and shape its product portfolio accordingly by viewing internal and external linkages with what structures the industry (You, et al. 2017). Over the years, a growing demand for **Renewable Energy** has been observed, primarily driven by an intensified focus on sustainability and reducing carbon emissions. And, as projections indicate, this sector is expected to become the largest generator of electricity globally within the next three years and to increase its global production share from 29% to 35% (United Nations 2023). LPS is critical to protect high-value renewable energy-generating equipment, which, if damaged, incurs substantial repair costs and may, in some cases, be irreplaceable. Consequently, the rising demand for renewable energy sources will drive an increased need for

their protection, which will significantly propel the LPI to provide and innovate the best solutions to safeguard these vital renewable energy sources. As previously mentioned in the PESTEL Analysis, the trend towards **Smart Homes and Task Automation** has driven the need for electrical protection, making LPS critical in safeguarding these devices, which, if damaged, could lead to the collapse of the entire home system. Similarly, this trend is combined with the **Covid-19 pandemic** altering consumer behavior, making more individuals to work remotely, which lead to an increased time spent at home (Mckinsey & Company 2023). Consequently, this shift underscores the necessity for lightning protection in residential buildings to safeguard personal electronic equipment such as computers and routers, expanding the B2C segment potential within the LPI. Simultaneously, **Energy Efficiency** also occupies a prominent place in consumers' priorities as current trends show a driving demand for energy-efficient appliances (Prescient&Strategic Intelligence 2020), and technologies enabling energy monitoring and reduction. Moreover, the **extreme changes in weather** and lightning strikes have become increasingly common in various parts of the world (Cottam 2022), and have heightened concerns for property protection and safety regulations among consumers (IEA 2022), further amplified by insurance companies imposing stricter requirements, encouraging individuals and companies to prioritize protection measures.

Furthermore, the **Telecommunications Industry** emerges as a significant influence on the LPI, as the infrastructures in this sector are highly sensitive to lightning strikes (Precedence Research 2023), increasing the demand for robust LPS. Also, the estimations of significant growth in this industry with a CAGR of 0.6% by 2027 (Global Data 2022) are driven by the rise of advanced technologies like Artificial Intelligence (AI), robotics, and the Internet of Things (IoT), which will influence the Portuguese LPI development (Precedence Research 2023), as it creates an emergence for modern infrastructural development, granting a demand for lightning protection since they are sensitive systems to natural events such as storms.

Overall, these trends and anticipated industry growth strongly indicate positive aspects for the LPI due to the ongoing development and expansion of influential industries, coupled with shifting consumer trends. Currently valued at US$5.05 billion globally, the LPI is anticipated to reach approximately US$8.40 billion by 2030, exhibiting a CAGR of 6% (Precedence Research 2023). Besides this positive global outlook, the changes in consumer behavior and industry dynamics offer positive potential forecasts for the LPI in Portugal, stimulating a proactive approach to adjust to the market needs and strenghten lightning protection measures.

Key Industry Success Factors

Critical success factors in an industry are key elements for a company to streamline its strategic planning efficiently, as they aid in accessing crucial industry areas and shaping decision-making guidelines while filtering out less significant aspects (Indeed 2022). Therefore, to analyze the industry, five main general critical success factors were generated (Sá and Hambrick 1989) after revolving around the PESTEL and Porter's Five Forces analyses' insights.

The **strategic focus** stands as a cornerstone for any company within the LPI as it helps delineate clear objectives and strategies, encompassing on the formulation of robust value statements, leadership goals delineation, and meticulous tracking of the customer's payment registration. Furthermore, the accumulated market knowledge facilitates the tracking of technological advancements, enabling the adaptation of products and services to gain a competitive edge within the industry. Hence, the **human capital** stands as a crucial driver of technological progress within this sector, as the industry operates within a framework of stringent regulations, compliance with standards, and necessary certifications, all of which the LPI technicians must adhere to diligently. So, its significance cannot be overstated as it is through their expertise and understanding that the industry evolves to navigate changing environmental landscapes, shifting market dynamics, and evolving consumer preferences.

Another key success factor (KSF) that contributes to the LPI success is deeply tied to the **quality control** measures underlying operational activities across all players. As observed in the Porter's Five Forces analysis, the LPI presents an intense competitive landscape where getting a differentiation edge poses a challenge. Therefore, alongside complying with regulations mandating robust lightning protection for infrastructures, the survival and success of players in this industry hinge on their capacity to utilize high-quality components that adhere to stringent standards. Additionally, companies must continuously diversify their offerings by creating an extensive range of products and services tailored to address the specific needs of every consumer for a competitive price. This adaptability and commitment to quality become pivotal in setting apart these industry players amid the competitive milieu and compliance-driven environment of the LPI.

Fourthly, the **brand image** holds significant weight in achieving success within the industry, as evidenced in the positioning map of the competitive landscape in Portugal. A recognized brand name carries inherent value and influences the industry's response, as, for customers, it symbolizes knowledge about the benefits offered by a company's products and services, enhancing the attractiveness of the firm within the industry. Lastly, **customer financing** emerges as a KSF within the LPI. As previously observed, the manufacturing costs associated with the LPS and subsequent pricing strategies in the industry mandate adherence to payment deadlines by customers to ensure future cash flow sustenance and financial stability. Thus, meeting these payment requirements is fundamental for the survival and continued operation of companies within the sector, ensuring they remain financially robust and capable of delivering high-quality products and services.

In conclusion, the LPI demands a strategic confluence between strategic focus and market knowledge, human capital, quality control, brand image, and customer financing, to leverage

companies within the LPI and shape the industry's market dynamic, ensuring not only survival but also continued growth and competitiveness in this ever-evolving sector.

Country Specific Advantages

A company's successful competitive advantage is heavily influenced by its home country, as it encapsulates distinctive resources, environmental factors, institutional variables, and other aspects contributing to country-specific advantages (Zhang 2016). And, to assess the national competitiveness of a country, Porter created the Diamond Framework, which is composed by four determinants – factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry. Accordingly, these factors are the source of competitive advantage since, from a strategic perspective, they display each *nation's playing field* for industries to operate and grow (Vlados 2019). In terms of **factor conditions**, which are the resources and infrastructures a country possesses to foster a conducive business environment for companies involved in specific industries (Vlados 2019), Portugal appears as an abundant pool of skilled labor in the Science, Technology, Engineering, and Mathematics (STEM) field, standing as a cornerstone for the country's potential in this domain with approximately 80 000 higher education graduates annually, of which around 30 percent specialize in STEM. Subsequently, exhibiting the third-highest ratio of engineering graduates in Europe (aicep Portugal Global 2021), where two universities (Universities of Lisbon and Porto) stand in the top 500 universities in the electrical engineering field, according to the NTU ranking (NTU Ranking n.d.). Hence, it may help in the sharing of useful information to innovate the existing products. However, LPI in Portugal faces a challenge due to its niche nature, lacking reputable recognized firms, which presents a difficulty to attract this specific pool of talent. Undoubtedly, a key factor of the country's technological advances has been evinced by the government's dedication to R&D investments, signifying a commendable 1.71% of the GDP in 2022, which showcases a growth from preceding years (Pordata 2022); notably, a predominant portion of

this investment has been strategically channeled towards the advances on engineering sciences and technology related areas (IDC; StartUp Portugal; Portugal Digital 2021). Overall, the abundance of skilled labor in STEM fields in Portugal, coupled with substantial government investment in related sectors, holds paramount importance for the LPI. Beyond this, Portugal's infrastructure development also plays a pivotal role for lightning protection companies since it ensures continuous business operations. As stated previously in the PESTEL analysis, this development has been under FDI and government's attention, resulting in the modernization of transportation, energy, communications, and water management systems (Global Market Insights 2023), positively impacting economic performance (Fontes, Ribeiro and Silva 2013). In 2022, Portugal achieved a Logistics Performance Index on the quality of trade and transport-related infrastructure of 3.60 (from a scale of 1=low to 5=high), signifying its status as a well-developed country with modern infrastructures supporting efficient logistics operations and trade facilitation (World Bank 2023). This infrastructural enhancement has a pronounced impact on market access, particularly for industries reliant on optimal supply chain, including the LPI, as assessed in previous analyzes. For instance, Portugal's integration within the Ten-T Core Network Corridor Initiative, specifically the Atlantic Corridor – a rail network connecting Portugal, Spain, France, and the French/German Border (European Comission 2017) – exemplifies the country's commitment to optimize logistics. Moreover, concerning the **demand conditions**, i.e., the nature of the domestic demand for the industry's product or service, is characterized by the client base composition, the demand's size, and the internationalization of domestic demand (Vlados 2019). Firstly, in the context of the LPI, and outlined by Vlados (2019), the composition of domestic demand is influenced by the growing awareness regarding safeguarding against lightning strikes; and, the demand's size and growth pattern are stimulated by varied factors, including heightened infrastructure development, implementation of safety standards and external conditions shaping the market landscape. Henceforward, the

governmental regulations mandating lightning protection for buildings (Decree-Law No. 410/98 of December 23, Article 115º) (MEPAT 1998) in Portugal, stand as a significant advantage for companies operating in this industry, since it creates compulsory demand for LPS, establishing a compelling need within consumers and reinforcing the domestic market for the most secure and compliant certified solutions.

Further fortifying the LPI's standing in Portugal, there are **related and supporting industries** upstream and downstream that stimulate the analyzed industry's evolution (Vlados 2019), such as Renewable Energy, ICT, Oil and Gas, Transportation and Logistics, and Construction (Industry Expert Research 2023). Among these industries, the Transportation sector holds particular relevance due to its direct correlation with the LPI by being a supporting industry as it helps providing the necessary components crucial for the development and competitiveness of this particular industry. In Portugal, companies within the LPI benefit from an optimized Transportation and Logistics sector (Carlier 2022), marked by the growth of the number of enterprises to meet the evolving needs of the Portuguese network (TPN 2022). Also, AI, Machine Learning, IoT and Blockchain have been innovations increasingly embedded in the Portuguese Transportation and Logistics sector as they help to optimize logistical flows, reducing operational inefficiencies (aicep Portugal Global 2020). These advanced technologies enable lightning protection firms to provide sophisticated solutions aligned with sector dynamics, augmenting reliability and resilience in safeguarding critical infrastructure. Additionally, lightning protection companies can establish alliances with other entities to catalyze innovation, like incubators, accelerators, and support programs, and gain a competitive edge in the Portuguese market (IDC; StartUp Portugal; Portugal Digital 2021). Hence, it is important to assess **the firm strategy, structure, and rivalry** within the industry to better understand how firms are managed and their competitive approaches within the same national circumstances (Vlados 2019). The Portuguese market, dominated by micro and small

enterprises (5.5 new companies per 1000 inhabitants in 2020) (The World Bank 2020), presents challenges in consolidation and scalability for micro lightning protection companies. Thus, it creates a necessity for optimized organizational structures, streamlined operations, and strategic collaborations for sustainable growth and competitive positioning. But the information sharing among competitors in the industry is not common practice, placing some limitations on process improvements and resource optimization (International Trade Administration 2023). According to referred analysis, Portugal has strong players, from micro to multinational enterprises, within the LPI, and to face the intense rivalry, they have adopted strategic alternatives beyond direct market participation; instead, they have chosen to become suppliers and emphasize synergies in alliances with other players. Ultimately, the LPI in Portugal stands within a dynamic ecosystem. However, the referred challenges and competitive forces inhibit Portugal's capacity to leverage its CSAs, hampering the LPI's ability to capitalize on the country's unique strengths.

4.3. Firm Specific Advantages

Resources and Competences (Value Chain)

Value chain offers a profound understanding of the competitive sources of a company by dissecting a firm into its strategically significant activities, showing the potential sources of differentiation and allowing a company to outperform rivals either through cost efficiency or superior performance (Barnes 2001). Therefore, the value chain concept presents organizations as systems composed of interconnected subsystems engaged in acquiring, transforming, and outputting resources, in which its activities encompass primary and support functions. Moreover, the value chain framework perceives value as a combination of benefits, which customers must weigh against incurred costs (Dorri, Yarmohammadian and Nadi 2012). To identify Beta's value, its technological and strategic activities will be isolated (Barnes 2001).

Firstly, there are the following five primary activities involved with the firm's strategy: inbound logistics, operations, outbound logistics, marketing sales and service. Beta's **Inbound Logistics**

are significantly costly due to its business model, which involves buying components from a wide array of suppliers, both within and outside Europe, based on the company's forecasted demand and per incoming request; also due to the fact that the company refrains from outsourcing its procurement processes to ensure that quality standards are consistently met. In the event that certain components remain unused, Beta opts to store them in a limited warehouse space in its headquarters, leading to occasional accumulation of obsolete inventory. Subsequently, the company advances to its **Operations** to convert inputs into final products; so, depending on the scale of the purchase and to still ensure commitment to quality, Beta either conducts the assembly of the final product in-house or directly on the client's infrastructure, under its brand name. And, as outlined in its financial reports, the company derived 59% of its total revenue from product sales. As **Outbound Logistics**, and due to financial constraints, the company has not established any fixed distribution network. Instead, to deliver final products to customers, they employ a flexible approach, which involves either arranging meetings between a company's worker and the customer or promptly engaging transportation services for swift deliveries while maintaining rigorous quality checks and compliance with regulatory standards throughout the delivery process. Moreover, as the company also functions as a component supplier within the LPI, it maintains these components in storage in its small warehouse facility. However, it's important to note that they do not possess a separate distribution center for these stored components. Later, to induce buyers to purchase from Beta, the company's **Marketing and Sales** activities diverge from heavy reliance on traditional advertising or an extensive sales force. Instead, Beta has primarily established a website for clients to submit their purchase requests, so then the company can employ a consultative selling approach to tailor solutions according to the specific needs of customers, subsequently presenting them with the final pricing. Moreover, Beta actively engages in professional training sessions in schools to impart industry-specific knowledge, thereby supporting them in

understanding the sector needs and promoting the company. As a final **Service** activity, Beta provides installations, repairs, product adjustment, and maintenance.

Besides the primary activities that Porter distinguished as the main value generator of a company's products, it is also relevant to analyze the indirect effects of the support activities in the final value of the products as they ultimately contribute to the creation of sustainable competitive advantages (Kumar and V. 2016). Therefore, these activities can be divided into the following categories: Firm Infrastructure, Human Resource Management (HRM), Technology Development, and Procurement (Barnes 2001). Firstly, **Beta's Infrastructure** is already thoroughly evaluated in the Firm Overview section on Chapter 4. The company's competitive distinctiveness stems from an integrated approach across its entire chain, which is fortified by the combination of management's extensive *know-how*, stringent quality assurance practices, international expertise, and negotiation affairs with various entities. For instance, the relations between Beta's subsidiary in **[…]** and the **[…]** army display the comprehensive consolidation of these competencies. Eventually, this organizational governance influences the firm's level and cost structure; however, inefficiencies in cost management prevail, primarily because it remains unclear whether the costs of the company's products and services surpass the relative costs incurred across its value chain activities (Kumar and V. 2016). Moreover, while **Human Resource Management** highly supports the efficiency of every primary activity within the company (Barnes 2001), its impact on Beta's competitive advantages is not positively substantial, which is primarily attributed to inconsistencies in effectively executing essential HRM processes such as recruiting, hiring, and personnel bonus compensation processes (Barnes 2001). However, the training and employee development has been thoroughly secured by the GM. Contrarily, the inconsistencies stem from financial constraints, and lack of brand attractiveness, making the GM responsible for every process, hampering Beta's ability to robustly leverage this activity as a support for competitive advantage within

the industry, and impacting negatively, for instance, the operations and outbound logistics activities as it minimizes the company's responsiveness ability. Consequently, **Beta's Technology Development** is limited since the R&D is embodied in the GM's work and expertise, which slows the introduction of new products, technologies, and product designs as human capital induces a stronger R&D work culture for an effective value creation (Nauhria, Kulkarni and Pandey 2017). Finally, **Procurement** is integrated across various aspects of the supply chain, and strategically linked with the primary activities since it manages the acquisition and delivery of essential components, effectively bridging the gap between external suppliers and internal operations (Swafford, Ghosh and Murthy 2006). Accordingly, Beta, with a multitude of choices available for sourcing components, reveals a major level of manufacturing flexibility attributable to its procurement practices, such as supplier relationship management and strategic sourcing since it precisely picks suppliers based on its quality and reliability criteria.

In essence, Beta's value chain enhances how the micro size of the company and constraints affect its operational dynamics and competitive standing within the lightning protection industry, revealing how interconnected are both its primary and support activities. Therefore, addressing the referred constraints, enhancing HRM efforts to further foster innovation, and refining operational efficiency emerges as the pathway for Beta to elevate its competitive positioning within the industry and compete more effectively, increasing its success margins.

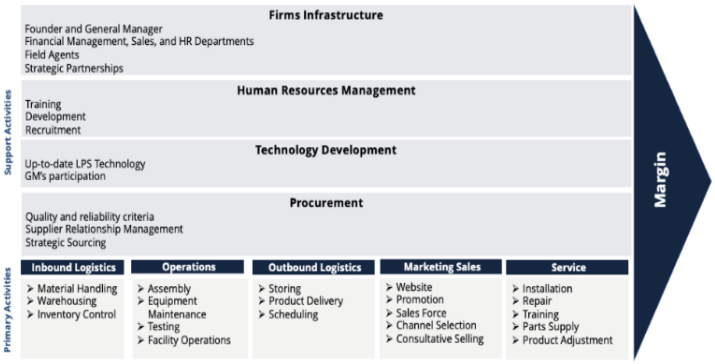


Figure 3: Company Beta's Value Chain

Firm Sustainable Competitive Advantage (VRIO)

A company must evaluate the role its resources and capabilities play to build a sustained competitive advantage for a smooth internationalization decision process (Sánchez 2018). Therefore, the framework VRIO must be conducted as it will successfully give an overview of the Valuable, Rare, Inimitable, and Organized internal factors that the company possesses and can lead to competitive advantage (Murcia, Ferreira and Ferreira 2021). VRIO's initial phase involves assessing if a resource is Valuable to a point it enables the company to seize opportunities or shield against threats; moreover, if a resource is Rare signifies it is exclusive to one or a few companies. Then, Inimitability refers to resources that are costly and hard to imitate due to its historical development conditions, ambiguous causality, and elements originated by the firm's culture. Lastly, the final step emphasizes internal organization that allows a firm to sustain competitive advantages from resources passing prior evaluations, and it must align its management systems, policies, processes, and culture (Sánchez 2018). This alignment enables effective resource utilization, preparing the firm to capitalize on them and reach competitive advantage. Concurrently, in order to get a critical qualitative outcome for decision-making process, the following Beta resources will be analyzed: the Global Supplier Network, the Human Capital, the Diversified Product Range, and the R&D Process.

Firstly, Beta is a company characterized by its differentiation strategy, demanding partnerships with the most suitable suppliers who integrate process quality and comply with international standards. As stated, the company has suppliers spread globally who have been providing components with consistent quality without compromising the company's responsiveness ability. By this, Beta can easily move its products and services to end consumers and, also, cover international markets, as seen by its exportation experience, turning its Global Supplier Network into a valuable resource as it enables the company to reach new opportunities, and increase customer value. However, these suppliers can be working with multiple companies

within the same industry as Beta, making this resource not rare. Then, with the Global Supplier Network, Beta achieves competitive parity since it is easy to copy and implement. The same occurs with the Human Capital resource, as it is characterized by lack of the intangible assets, due to the company's financial constraints and lack of attractiveness to acquire talent. Therefore, the hiring process, motivation and commitment initiatives, and training on the firm's practices and procedures (Sánchez 2018) are undertaken by the GM which is a certified expert within the LPI and has years of experience. However, the value of the human resources in value creation has not been operationalized as there are no reward systems, perceived job satisfaction or incentive-based compensation that can surpass the ones implemented by competitors within the industry (Barney and Wright 1998), therefore complicating the company's ability to be attractive even for individual salesperson. Overall, the resource is valuable since it allows the company to increase customer value as the GM's expertise, know-how, and business experience permits to increase product and service differentiation to customers; but it is not rare, as it can be acquired and implemented by any company in the same way. Similarly, Beta's Diversified Product Range stems from the dynamic start-up environment and the GM's expertise, which enabled the implementation of a strategic planning that prioritizes responsiveness, quality, compliance, and uniqueness for every customer request. Yet, this resource lacks protection through patents, copyrights, or trademarks, rendering it vulnerable to imitation despite the company's extensive development efforts (Sánchez 2018). Consequently, while holding value, the resource's absence of rarity limits Beta to achieving only competitive parity. Lastly, the R&D process is peculiar in Beta as it is mainly determined by the GM's unique expertise that it is hard for competitors to duplicate, even though they must also have specialized teams focused on leveraging its offers. However, existing competitors can implement a second-mover strategy and capitalize on Beta's R&D discoveries by imitating, and improving, its innovativeness (Sánchez 2018) creating in this way their own version of that resource.

Therefore, the R&D process gives Beta a temporary competitive advantage since it is a window of opportunity for the company with limited duration. In conclusion, Beta encounters hurdles in maintaining a long-term competitive advantage, primarily due to the absence of rare resources, positioning the company at competitive parity levels, making this micro firm's specific advantages weak.

Valuable	Rare	Inimitable	Organized	Competitive Advantage
Global Supplier Network				Competitive Parity
Human Capital				Competitive Parity
Diversified Product Range				Competitive Parity
R&D Process	R&D Process			Temporary Competitive Advantage

Figure 4: Company Beta's VRIO Analysis

4.4. Diagnosis for Internationalization

SWOT Analysis

In the early stage of the international market selection process, companies must cultivate a significant understanding about its internal and external business landscapes so they can formulate effective strategic decisions (Isa, Ismail and Ibrahim 2020). Therefore, conducting a SWOT Analysis holds paramount importance as it systematically evaluates an organization's strengths, weaknesses, opportunities, and threats, delineating internal controllable elements that aid or impede mission achievement (Strengths and Weaknesses), alongside external uncontrollable factors that facilitate or hinder organizational goals (Opportunities and Threats) (Phadermrod, Crowder and Wills 2016). Therefore, by applying a thorough SWOT analysis on Company Beta, valuable insights were reached. As ***Strengths***, **technical expertise** is demonstrated as the key to the business development, since it allows **product customization** to address each unique client request and to comply with **quality control** requirements and

regulations demanded by the client and the government, which enhances its competitiveness within markets; additionally, the company has a **sound customer support after-sales service in the B2B level**, in which the company does the continuous maintenance of its sold products. Finally, its **diversified portfolio** reduces risk and demonstrates the company's ability to respond to changing market conditions and consumer preferences, as well as the **acquired experience in international markets** through other enterprises. However, the product customization exposes Company Beta's ***Weaknesses***, such as the subjacent **cost inefficiencies** linked to its customized production, which increases its **dependency on its supplier network**. And, even though, this reliance has its benefits, it also makes the company more susceptible to disruptions in its supply chain, affecting its responsiveness ability. Similarly, its **limited and small customer base** presents challenges to achieve a sustained sales growth compared to larger competitors, which was the result of the inadequate marketing efforts, unsuccessful usage of the available and implemented company's channels, such as its website, and other ineffective strategic approaches. Also, **the shortage of workforce**, resultant from its lack of investment in brand image enhancement, further compounds its difficulties in meeting purchase demands and scaling efficiently; and the **reliance on upfront payments** from clients restricts the potential for acquiring new customers. Consequently, these factors collectively contribute to Company Beta's **financial underperformance**. Lastly, **the susceptibility of the company's business model to replication** is another notable concern, as more and more competitors have been implementing the same strategies, often resulting in companies with a more established and recognizable brand image reaping quicker benefits, further widening the competitive gap for those slower to build brand recognition. Nevertheless, there are some unexplored ***Opportunities*** for Beta, such as **the potential and feasibility of expanding into emerging markets,** presenting a promising avenue for sustained long-term growth as its products already comply with international lightning protection regulations. Also, given the synergies between the

renewable energy sector and the LPI, Beta could cater with its solutions to grow along with the **increasing demand for renewable energy sources**, as highlighted by the European Environment Agency (2023). Moreover, the **increasing importance of sustainability programs** (Zuniga 2022), and **for new and updated infrastructures** due to the worldwide infrastructure crisis (Michalis and Vintzileou 2022) offers a business growth opportunity for Beta. Yet, the LPI fits within an unpredictable environment, posing numerous ***Threats***, such as, shifts **in weather patterns** due to climate change, which **increases the susceptibility to regulatory changes**, potentially disrupting the operations across the industry; too, it can also **lead to supply chain disruptions** due to components non-compliant with forthcoming regulations, resulting in prolonged delays in procurement processes. Lastly, as international conflicts increase, the possibility of a **potential war** could trigger a sharp rise in inflation of even non-combatant countries, as evidenced by Ozili (2022), leading to **stock and production rising costs**; moreover, such geopolitical turmoil can create a **propensity for capital flight** due to market uncertain dynamics, jeopardizing funding prospects for small enterprises (Jr. and Figueira 2022).

FSA-CSA Matrix and Porter's Generic

Due to their liability of smallness and foreignness, many SMEs appear reluctant when internationalizing. However, when enterprises dominate their FSAs while assessing and emphasizing their operations accordingly with the CSAs, the resulting international business strategy gains a robust foundation on how it was built (Hillemann and Gestrin 2016); which helps understand the alignment between the company's positioning within the Porter's Generic Framework and its internal and external market conditions. Concurrently, this alignment is validated through the insights gleaned from the aforementioned SWOT analysis, culminating in a more thorough understanding of the company's competitive stance, thereby refining, and reinforcing its international business strategy for optimal market selection and expansion.

Considering these strategic frameworks, Company Beta's decision to establish itself in Portugal, despite weak country specific advantages and firm specific advantages (see Figure 5), suggests a suboptimal decision rather than a rational and well-informed strategic decision (Hillemann and Gestrin 2016). In competitive terms, the value proposition of the company strongly holds on a differentiation strategy (Allen and Helms 2006) (see Figure 6), resultant from the company's focus on providing a unique product customized per client request, as well as on the service given to its customers – this is visible by its sound core FSAs and then, reflected on its Strengths. This strategy typically appeals to a customer with high knowledge about the uniqueness and quality of these types of products, allowing the company to command higher prices, still accepted by the client base (Allen and Helms 2006). However, the prevailing country-specific conditions account for the weaknesses observed within the company, such as the limited and small customer base along with its financial underperformance, and due to the level of rivalry among competitors, evaluated by Porter's Five Forces framework, particularly prevalent within the niche market scope of Portugal in the LPI. Furthermore, the vulnerability of the company's service to replication, lacking legal protection or a distinctive differentiation strategy, contributes to these challenges. And, even though the company is operating in the total market, i.e., not having focused on a specific and only segment, and offers a customized experience to its clients, Portugal does not give a specific outstanding benefit to the company and most players offer similar distinctive products/services as Beta. Ultimately, this scenario demands the company's internationalization due to the limitations and weaknesses generated in its domestic market that have been constraining the company's performance and potential.

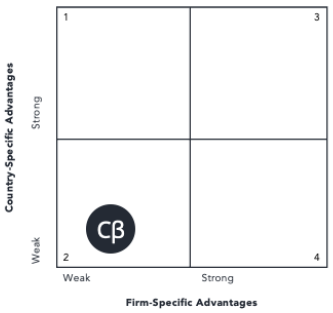


Figure 5: Company Beta's FSA-CSA Matrix

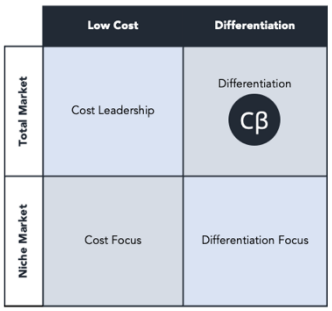


Figure 6: Company Beta's Porters Generic Competitive Strategy

Motives for Internationalization

Competition is increasing, and SMEs, unlike giant corporations, find it more challenging to remain competitive in the domestic market (Kubíčková and Toulová 2013). Therefore, companies cross-borders to benefit from new market dynamics and contract competitive advantage (Sakarya, Eckman and Hyllegard 2007). As a small firm, Beta aims to internationalize under market-seeking motives driven by the aspiration to access a broader customer base, to stimulate demand for its products, and, consequently, increase the sales revenue and market share. This brand enhancement can fortify the company's image, enabling the company to penetrate new markets and position itself as an attractive company for qualified young talent since establishing a presence in international markets engenders a sense of trustworthiness that the company is able to generate long-term prospects and foster an environment conducive to successful business continuity. Moreover, venturing into new markets diversifies risk, and helps the enterprise to globalize its supply chains, access new resources, gain trade expertise, and establish strategic partnerships (Cieślik, Kaciak and Welsh 2012). Subsequently, such collaborations enable the company to navigate into new market more efficiently, without overstretching resources (Lu and Beamish 2005), thereby tackling Beta's primary objective of reducing transaction costs while securing essential financial funds to pursue its internationalization.

Global Readiness

Company Beta, as a small enterprise led by management with international experience, aims to fortify its competitive positioning through global expansion. However, it is crucial to understand if the company has the profile and resources to pursue this desire, which was methodically examined (refer to Appendix 2). Consequently, this analysis culminated in the determination of a Global Readiness Score of 60%, which reflects Beta's capability to venture into international markets through a Direct Exporting Approach. However, this approach, by

involving investment in foreign-based agents, foreign-based distributors, foreign sales representatives and retailers, and direct sales to end users, requires significant resource investment, market research to acquire good cooperative local agents, tangible assets, and others (U.S. Department of Commerce 2016) to successfully be implemented. Still, Beta's financial underperformance and lack of qualified workforce cannot support its implementation by itself, as the company's capacity to complete the business model expansion would be constrained, potentially limiting its presence within the selected international market. Nevertheless, the company has been covering lower global readiness scores as it has a subsidiary already established in the **[…]** market, which enhances some experience with indirect exporting and contractual arrangements. However, the e-Commerce level remains underdeveloped, as Beta's website primarily functions as a request platform; and the company still faces limitations in conducting purchases online without physical client contact, since the infrastructure assessments to implement the LPS require on-site evaluations, which is a type of contact that e-Commerce eases as it enables online conduction of interactions and evaluations (Jain, Malviya and Arya 2021). Ultimately, addressing the financial and available workforce constraints, besides the liabilities referred in previous strategic frameworks, while enhancing brand image and online presence will be pivotal for Beta's successful international expansion. Moreover, aligning the entry-mode strategy with its internationalization needs will optimize the 60% Global Readiness Score, positioning the company for the desired sustainable and prosperous global growth.

5. International Market Selection

5.1. Country Selection Criteria

Given that the aim of the chapter is to provide suitable countries to internationalize, the first scope of analysis was the 193 UN-recognized countries plus the non-members Kosovo,

Palestine, Taiwan, and the Vatican City (United Nations n.d.). From this first selection, given that the company does not currently possess the ability to face big players within the LPI, the widely developed economies with the most intense competitive landscape were disregarded from the analysis, wiping out the European Continent, the United States, Canada, Japan, South Korea, Australia, and New Zealand (reducing the country's list to 144). However, given Beta's presence in […] and Portugal and the executives' desire on managing the new expansion through the existing offices, the team decided to remove geographically and culturally distant countries, making use of the Lewis Model (Lubin 2013). Accordingly, the Asian continent, except for the Gulf Countries, and the remaining Oceanian countries, were removed, reducing the number of countries to 95. Finally, most American countries, being Spanish speaking, already have a significant number of competitors from Spain. Furthermore, the Gulf Countries are increasingly more attractive to foreign companies, due to their economic reforms and favorable regulations, so the company would likely face strong competition in the region (Kotilaine 2023). Thus, only the African continent was selected for further analysis.

Within the 54 African countries, further restrictions needed to be imposed for their selection (refer to Appendix 3 for further details). Firstly, to allow for a successful ranking, every country should have available data for each macro indicator. Hence, if a country exhibited missing data for three or less indicators, neighboring countries served as proxies to mitigate the lack of information. However, this was not the case for Eritrea, having non-available information or old data for four indicators, thus being removed from the list of countries. Secondly, countries with a population below 1.2 million inhabitants were considered not suitable for the firm's goal of increasing in scale due to an expected lower number of enterprises and their inherent lower B2C potential. Thus, Cabo Verde, Comoros, Djibouti, Sao Tome and Principe, and the Seychelles were also removed (bringing the number of countries to be analyzed to 48). Finally, as the company's product purpose is to protect from lightning strike damages and more stringent

regulation concerning LPS, increased demand is expected in countries with a higher lightning density, so it was opted to remove the countries with scores below five strikes/km^2/year (Algeria, Egypt, Kenya, Libya, Mauritania, Mauritius, Morocco, Niger, Somalia, and Tunisia). Accordingly, the final list of countries to be considered for internationalization had 38 constituents, alphabetically: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo, Republic of the Congo, Cote d'Ivoire, Equatorial Guinea, Eswatini, Ethiopia, Gabon, the Gambia, Ghana, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, South Sudan, Sudan, Tanzania, Togo, Uganda, Zambia and Zimbabwe.

5.2. Country Ranking

Business owners face a complex task concerning foreign market selection due to a multitude of potential countries available to be chosen and many decision factors to consider. Therefore, to navigate this complexity, managers need to adopt a structured approach, which can be done by employing two techniques – country ranking and country clustering (Cavusgil, Kiyak and Yeniyurt 2004). Firstly, and in this case, the country ranking involves evaluating countries based on key market potential indicators, to identify target markets efficiently. Thus, twenty-seven macro indicators were considered and grouped into six major categories: market size, market growth rate, market characteristics, climate conditions, country risk, and trading barriers. To ensure comprehensive country ranking, a structured approach was utilized to assign reliable weight importance to each macro indicator. Subsequently, discussions were held with the General Management team to align the company's considerations with the decision-making process. As a result, the crucial macro indicators were determined with weights ranging from 12 percent to 4 percent, ultimately leading to the identification of the top nine most significant indicators (for further insights into the remaining eighteen indicators, including their respective

weight importance and relevant rationale, refer to Appendix 4). Firstly, the **Lightning Density** (Vaisala 2022), with a weight of 12 percent, is the most important macro indicator to consider in this IMS given that the primary focus of Beta's business revolves around safeguarding buildings from storm damage with LPS; consequently, a country with a higher frequency of lightning strikes per km^2 not only generates increased demand for the company's products and services, aligning with its motive for internationalization, but also draws the company to a knowledgeable customer base regarding this core business driver, in both B2B and B2C segment. Moreover, from the second place to the sixth, and with a weight importance of 6 percent, the ranking is contemplated by the following macro indicators with no specific order: Construction Industry (% of GDP), Cost to Import (Border Compliance), Corporate Tax Rate, Projected Inflation Rate in Africa as of 2023 (compared to previous year), and Average Cost of sending 200 US dollars to. The **Construction Industry (% of GDP)** was allocated with a weight of 6 percent since it was considered as a proxy to assess the B2B segment potential of each African market, since, as stated previously, the construction development of a country contributes to the company's profitability as nowadays more countries have been implementing regulations that mandate the installation of LPS in infrastructures to ensure the protection and prevent costly replacements (Chappel 2023). Therefore, the greater the relevance of the construction industry, the greater the demand for LPS and the more attractive is the market. Too, Beta has to efficiently manage the cross-border trade, i.e., the costs and compliance procedures (World Bank 2019) when moving overseas as it will also decrease its risk due to client-base and supply chain diversification (Bancoli 2023).

Understanding market feasibility, particularly for small enterprises, involves considering as key the **Corporate Tax Rate Indicator** (Enache 2022). A lower corporate tax rate has an impact that goes beyond simple financial adjustments, it significantly impacts business investment decisions as it increases the business output, particularly benefiting smaller enterprises (Harju,

Koivisto and Matikka 2022) like Beta which has limited access to alternative funds and lower cash reserves. And, since taxes are perceived as a burden to investment and to economic productivity, it is an expense to be minimized (McCormick 2021). Thereby, choosing a geography with a low corporate tax rate increases Beta's chances of survival, as this surplus capital can be invested in mitigating other risks inherent to the internationalization process. Additionally, as a way to mitigate a possible profitability decrease, it is vital to consider the **Projected Inflation rate in Africa as of 2023 (compared to the previous year)** (Galal 2023) since increasing inflation leads to profit ambiguity for company owners as they increase their prices to counter inflation effects (Hazlitt 1997) , which, for small enterprises, can be a risky move, complicating their process to reach their profit margins (Camberato 2022). And the consideration of the **Average Cost of Sending US$200** to an African country also holds the same relevance regarding profitability, since a country with a lower value demonstrates that cross-border payments or transactions present less challenges in comparison to other geographies (Stripe, Inc. 2023), allowing companies to improve their expenditure allocations in other targets (Ratha n.d.). At the international level, companies must analyze the nuance of the **Ease of Doing Business Index** (World Bank 2020) as it permits to understand how favorable the conditions of a certain market in comparison to others are for doing business (World Bank 2023) since it meticulously assesses vital aspects of business regulations crucial to firms and national competitiveness, particularly benefitting SMEs (Bhasin 2019). Adding to it, the index represents a culmination of multiple reforms, and has showcased significant advancements in Europe and Central Asia, Sub-Saharan Africa, and the Middle East and North Africa; and, importantly, these efforts have proven to be cost-effective and instrumental in enhancing a more conducive environment for companies to thrive, innovate and grow (Bhasin 2019). Therefore, a weight of 5 percent was allocated to this macro indicator due to its relevance for Beta's IMS. Lastly, and with a weight of 4% each, the macro indicators Foreign Direct

Investment and Urbanization in Africa were accounted. Primarily, **FDI** plays a pivotal role in establishing direct, enduring, and robust connections between economies as it serves as a catalyst for knowledge and expertise trade among nations, substantially contributing to overall economic growth (Tülüce and Doğan 2014). The benefits accruing from FDI are attractive for governments, particularly in developing nations, to a point in which they offer special incentives to attract FDI, so a significant FDI value allows companies to recognize a country prompted with tailored policies that stimulate these investments (Tülüce and Doğan 2014), which is important to channel in any internationalization process. Secondly, it is acknowledged that different countries/sub-regions in Africa experience significant different levels and rates of urbanization, creating immensely diverse urban environments (Dodman, et al. 2017), therefore making the **Urbanization in Africa** (Galal 2023) relevant to consider in the IMS. The diversity in urban areas leads to the clustering of talents and resources, providing external economies of scale that reduces company's operational costs since it will reduce distances and ease the access to improved infrastructures, which boost productivity, streamlining distribution channels, assisting in overcoming challenges like labor skill deficiencies (Estrin, Nielsen and Nielsen 2016) and enhancing competitiveness. Also, higher urbanization levels translate to larger and more densely packed consumer bases within the markets, providing firms with growth prospects.

Finally, after comprehensive evaluation of the aforementioned macroeconomic indicators, including the ones detailed in Appendix 4, and their respective weighting, the analysis revealed the standout top 5 destinations among the 38 African countries under consideration, which are South Africa, Botswana, Cote d'Ivoire, Rwanda, and Nigeria.

5.3. Country Clustering

In country clustering, the key focus lies in grouping nations with a similar economic development and commercial, cultural, and political dimensions (Cavusgil, Kiyak and Yeniyurt

2004) based on the following five crucial macro indicators: economic growth, represented by the GDP growth, market accessibility exemplified by the Ease of Doing Business Index, Size of the Construction Sector (% of GDP), Lightning Density as it represents the necessary weather conditions for the demand of LPSs, and strength of the local currency in the form of Inflation Rate. It is noteworthy that this selection was conducted considering the company's criteria, and stems from their optimal representation of the previously studied indicators.

Firstly, the **GDP Growth** reflects a country's economic trajectory (European Comission n.d.), making a high GDP growth rate advantageous for Beta's expansion, especially as a growing economy requires increased infrastructure (Bankinter 2016), which aligns with the company's end-user product and services, creating business growth opportunities for Beta. Moreover, the **Ease of Doing Business Index** indicator, beyond its aforementioned role, it also aids in anticipating market challenges (World Bank 2020), which is particularly valuable given Beta's limited resources, easing its navigation through potential obstacles. Similarly, and also mentioned above, the **Size of the Construction Sector (% of GDP)** is key in assessing the market's suitability for Beta, as a significant size relative to the country's GDP indicates a growing economy focused on infrastructure development and urbanization, which directly impacts the demand for electrical protection and fosters once again a conducive business environment for Beta (ZANDZ n.d.). Furthermore, the **Lightning Density** and the **Inflation Rate** give more concrete values pertinent to Beta. As aforementioned, and respectively, Lightning Density ensures demand for Beta's end-user product and services, showcasing a country's attractiveness; and the **Inflation Rate** consideration ensures a company about the possibility of repatriating funds from the country without incurring significant losses, and subsequently threatening the company's profitability and financial health (European Central Bank 2021). Additionally, this indicator holds considerable importance for Beta's GM due to

past experiences in which the company suffered unforeseen losses due to an excessive inflation of the local currency.

Henceforward, the correlation of these five macro indicators were assessed to guarantee that the analysis equilibrium would not be shifted, which was the case since the indicators showcased a low correlation, enabling the analysis (refer to Appendix 5) that allows to perceive the similarities between clusters and how various countries respond based on the chosen macro indicators. Moreover, the hierarchical cluster analysis was conducted using SPSS, employing a data analysis technique to cluster cases based on their similarities and differences. For this purpose, data from the five indicators was prepared, loaded into the system, and Ward's linkage method was utilized, which focuses on minimizing intracluster variance, tending to create more compact and homogeneous clusters, with a Squared Euclidean interval, which has resulted in the dendrogram represented on Figure 7. The referred clusters emerged through applying a cut-off distance of 5, determined from SPSS data using an Agglomeration Schedule (refer to Appendix 6) during the hierarchical cluster analysis; and the examination of coefficients and numerical distances between stages (see Appendix 7) guided the selection of the optimal number of clusters (University of Nebraska-Lincoln n.d.). Moreover, it is noticeable that the gap between coefficients is minimal after column 6 (refer to Appendix 7 for a better understanding). And, while the distance between columns 1 and 6 is significantly greater, suggesting the potential for an appropriate number of clusters could be found in column 6, upon examination of the dendrogram (see Figure 7), it has been determined that having 7 clusters is more coherent than 6. This, in

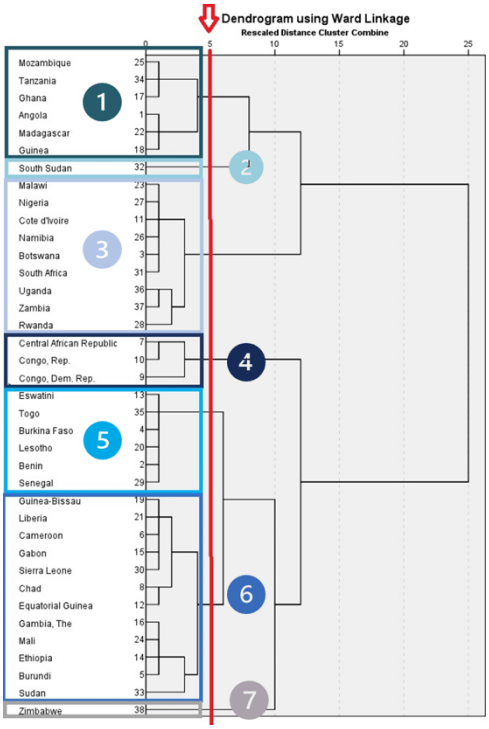


Figure 7: Dendrogram using Ward Linkage

terms of the data in the Agglomeration Schedule, does not represent a problem, as the difference between columns 6 and 7 is minimal. Thus, establishing a cutoff distance of 5 appears suitable as it provides a manageable number of groups for analysis. As a result, Cluster 1 stands out for its sizable construction industry, high inflation, moderate ease of doing business level according to African standards, commendable GDP growth, and moderate lightning density. Cluster 3 is composed by nine countries, exceling in GDP growth and ease of doing business, which influences the construction sector to be the second largest after Cluster 1; plus, their inflation is the second lowest, and their lightning density is moderate.

Following on to Cluster 4, characterized by its high lightning density, it presents complexities with an underdeveloped construction industry, and exhibits the second-lowest GDP growth among the clusters, moderate inflation rate and a low ease of doing business level. Meanwhile, Cluster 5 displays the lowest inflation and ease of doing business, a very small construction industry size, and a moderate lightning density and GDP Growth. Cluster 6, even though it comprises 12 countries, has a low performance across all indicators but in the lightning protection density and size of construction industry, reaching a moderate level compared to the remaining clusters.

Finally, Clusters 2 and 7 are composed by South Sudan and Zimbabwe, respectively. First, Cluster 2 differ significantly from Cluster 1 in certain aspects: the Construction Industry is more developed than the average, although notably lesser than on Cluster 1. Furthermore, it has a higher inflation and lightning density than the average, but a lower GDP Growth and ease of doing business index, likely due to severe political and social instability. In contrast, Cluster 7, akin to Cluster 6 in terms of construction industry and GDP Growth, stands out for having the highest projected inflation among all countries and the lowest lightning density.

Ultimately, the acquired data exhibits diversity among the clusters, highlighting robust differences between them, making Cluster 3 particularly appealing for Beta, as it presents overall more balanced results, aligning closely with the company's aforementioned goals.

Country Clustering Results								
Cluster 1	Cluster 2	Cluster 3		Cluster 4	Cluster 5	Cluster 6		Cluster 7
Madagascar	South Sudan	South Africa	Namibia	Congo, Dem. Rep.	Lesotho	Gabon	Equatorial Guinea	Zimbabwe
Ghana		Botswana	Zambia	Congo, Rep.	Togo	Ethiopia	Burundi	
Guinea		Cote d'Ivoire	Malawi	Central African Republic	Benin	Cameroon	Mali	
Tanzania		Rwanda			Senegal	Sierra Leone	Gambia, The	
Angola		Nigeria			Burkina Faso	Liberia	Chad	
Mozambique		Uganda			Eswatini	Guinea-Bissau	Sudan	

Table 6: Country Clustering Results

5.4. Combination between Country Ranking and Clustering Analyses

The comparison between the results acquired in the Country Ranking (CR) and Clustering (CC) Analyses serves to gain a nuanced understanding on how each method influenced the outcomes and to identify potential correlations between them, creating a robust foundation for Beta to select the top five countries for its international expansion. Therefore, by comparing the results in the Table 7 with the CR's results, it is evident that 7 out of 9 countries in Cluster 3 are among the top 8 in the CR, confirming the previously acquired results. Nonetheless, it is critical to recognize that despite the thorough examination, certain countries might excel in specific dimensions studied in the clustering while not performing as well in other indicators covered by the ranking analysis, as seen in the case of Zambia and Malawi in Cluster 3, two countries that are ranked low in comparison with the remaining countries in the same cluster. Moreover, comparing other clusters reveals that countries in Cluster 6 hold the lowest ranking positions, while the countries in Clusters 1, 4 and 5 occupy a mid-range position. Hence, it can be affirmed that the countries in Cluster 3 are the most interesting from the perspective of both CC and CR, strengthened by the alignment between these methods and acquired results, sustaining the decision-making process.

Country Clustering Results - Ranking Comparison														
Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5		Cluster 6		Cluster 7	
Country	# Rank	Country	# Rank	Country	# Rank	Country	# Rank	Country	# Rank	Country	# Rank	Country	# Rank
Madagascar	9	South Sudan	37	South Africa	1	Congo, Dem. Rep.	19	Lesotho	7	Gabon	12	Zimbabwe	34
Ghana	10			Botswana	2	Congo, Rep.	20	Togo	11	Ethiopia	16		
Guinea	15			Cote d'Ivoire	3	Central African Republic	28	Benin	13	Cameroon	21		
Tanzania	18			Rwanda	4			Senegal	14	Sierra Leone	25		
Angola	22			Nigeria	5			Burkina Faso	23	Liberia	26		
Mozambique	30			Uganda	6			Eswatini	29	Guinea-Bissau	27		
				Namibia	8					Equatorial Guinea	31		
				Zambia	17					Burundi	32		
				Malawi	24					Mali	33		
										Gambia, The	35		
										Chad	36		
										Sudan	38		

Table 7: Country Clustering Results with respective ranking per country

5.5. Selection of Highest Potential Markets (5 Markets)

The study conducted reveals that South Africa, Botswana, Cote d'Ivoire, Rwanda, and Nigeria are the top performers in both Country Ranking and Country Clustering Analyses, aligning with Cluster 3 results (refer to Table 7). Among these, **South Africa** leads the ranking with a population of approximately 65 million, displaying steady a GDP growth rate of 2.04%, (World Bank 2022), advanced urban infrastructure, and a lighting density close to average (Vaisala 2022). However, its occasional inflationary volatility challenges enterprises (FocusEconomics 2023). Despite this, it is renowned as the most advanced economy in Africa, and its membership in the Southern African Development Community (SADC) eases beneficial trade agreements with the EU (International Trade Administration 2023). Secondly, **Botswana**, despite the small population of 2.3 million (World Bank 2022), has shown notable GDP growth in recent years (World Bank 2022). Notably, is akin to South Africa in lightning density, economic structure, such as inflation behavior, and membership in the SADC. However, Botswana grapples with high unemployment rates, challenging its economic landscape (International Trade Administration 2023). **Cote d'Ivoire**, with a population of around 28 million, emerges as a prospective destination for Beta, displaying robust economic progress, with a 6.7% GDP growth in 2022 (World Bank 2022). Similarly, to referred countries, it has a lightning density that hovers fairly below the average, and while the inflation rate surpasses 3% (Statista 2023), it still remains low compared to Botswana and South Africa, marking stability.

On the other hand, **Rwanda** emerges as the fourth potential candidate for Beta's expansion, with a population of approximately 13 million (World Bank 2022). The country has felt notable

economic growth, shown by a GDP growth of 8.5% in 2022 (World Bank 2022). Distinctively, Rwanda surpasses almost all other African nations in terms of ease of doing business, marking it as a favorable environment for international ventures (World Bank 2023). However, it holds the lowest lightning density among the five countries, and an inflation rate of 8.2% (Statista 2023). Lastly, **Nigeria** appears as the final country with the highest potential for Beta to move overseas, driven by its substantial population exceeding 218 million inhabitants (World Bank 2022), with a GDP growth rate of 3.25% (World Bank 2022), and holds the highest lightning density among these countries. However, despite exhibiting a steady growth, and commendable political and economic stability (Credendo 2023), it faces significant high inflation, reaching 20.1% in 2022 (Statista 2023), and contends with a high informal economy (International Trade Administration 2022). Mutually, these countries consistently outperform the average African nations across key indicators, affirming their attractiveness as potential markets and enhancing Beta's chances of a successful internationalization.

6. International Market Selection – Phase 2

6.1. In-depth Market Analysis

6.1.1. Botswana (Eduardo Ureña – 56078)

Botswana emerges as an attractive destination for Company Beta's expansion. With a population of 2.6 million and an average age of 24, experiencing 1.6% annual growth (World Bank 2022), presents promising demographics. Notably, its focus on economic diversification and robust policies has ensured consistent GDP growth, averaging 6.7% annually (Government of Botswana n.d.). Boasting strong infrastructure and a favorable business environment, Botswana stands out in the Southern African Development Community (SADC). Identifying pertinent **contacts** within Botswana is a pivotal element in Beta's market entry strategy. This analysis emphasizes contacts unique to their Portuguese origin or past ventures, filtering out general contacts available to anyone relocating to Botswana. Notably, the Government of

Portugal does not maintain a direct embassy or consulate in Botswana (Portal das Comunidades Portuguesas n.d.). Additionally, Agência para o Investimento e Comércio Externo de Portugal aims to aid Portuguese companies in internationalization endeavors, offering courses, training, and sector-specific market insights (AICEP Portugal Global n.d.). However, it is not represented in Botswana. Therefore, Company Beta lacks access to the valuable services and information this organization provides for potential expansion into Botswana. Furthermore, the Portuguese presence in Botswana is quite small. There is no Instituto Camões, only a few Portuguese language courses at the University of Botswana (Camões worldwide n.d.), and a minor Portuguese community, with only 456 Portuguese citizens living in Botswana (Datosmacro 2020). Notwithstanding, the European Union has a delegation in Botswana, and carries out cultural, sustainability, and business support activities that can be of great interest, particularly the *EU-Botswana Business Forum* (October 2023), which aimed to bring together local and EU companies from a multitude of sectors interested in starting commercial relations (European External Action Service 2023). Potential contacts for Beta include primarily local and African banks, with notable presences from British and American (Bank of Botswana n.d.). However, the absence of Portuguese or European banks limits their direct relevance to Beta's internationalization efforts. While these foreign banks foster trust and security, their influence remains confined in this regard. Regrettably, the company faces a scarcity of contacts in the country, posing a challenge in leveraging this asset for international expansion. Hence, the company's network of contacts is quite restricted, except for the EU delegation in Botswana, which stands as one of the most valuable potential contacts for Company Beta.

Identifying **competitors** has proven challenging due to limited online presence in the sector and the scale and number of companies in a country with a population of just over two million. Consequently, there are few competitors, many without websites or details on platforms like Orbis. In addition to direct competitors in Lightning Protection Systems (LPS), consideration

has been given to electrical companies that undertake similar installations. In this regard, the aim is to highlight primarily those companies specializing in LPS and then those diverging from this market niche. First, there is *H.H.K. Earthing & Lightning Protection Systems*, an experienced company founded in 1976. Headquartered in South Africa with up to eight establishments, they also operate in Botswana with a location in Namibia. Employing over 138 people and specializing in LPS. They offer various LPS models and tailor solutions to meet any client's regulations and internal requirements (HHK 2023). Following this line, only local companies from Botswana were identified. An example is *Goldtech (PTY) Ltd,* listed on a contact page for country-based companies, specializing in LPS. However, further information is lacking as they have no website, only a Facebook profile with limited details. Other companies with a similar lack of information include *Protech (PTY) Ltd,* mentioned as LPS specialists but with scant information beyond an email suggesting their involvement in LPS, and specialized in mining protection but with their webpage under construction. And *Waterloo Electrical (PTY) Ltd*, is seemingly an electrical company with no specific focus on these systems. Besides their contact details, the only information available is an advertisement lacking mention of specialization in these security systems. Lastly, there are two companies that, while not specifically dedicated to LPS, provide more information. *Sharps Electrical*, a Botswana-based company, undertakes electrical installations, showcasing substantial projects like shopping centers on its website (Sharps Electrical 2023). They might also handle LPS installations, though it is unclear if they do it themselves or through third parties. Lastly, Live Copper, a Botswana enterprise offering various electrical products and services, caters to both B2C and B2B sectors. Their offerings range from decorative lamps and fans, to cables and plumbing, (Live Copper 2023). Nevertheless, there is no clear indication on their website whether they work with LPS, although occasional services might be provided beyond the available information. In conclusion, despite the scarcity of information, it can be stated that:

1) Companies potentially falling within this segment without even a website suggest their size and turnover might not be substantial. 2) There are not numerous companies specializing in LPS, suggesting limited initial competition. 3) The GM of Company Beta opines that South African companies might dominate due to proximity and Botswana's small size. (4) Hence, it can be affirmed that the number of companies competing is not substantial, and their expertise level in the service offered by Company Beta suggests the market could be largely dominated by HHK, given its experience and size.

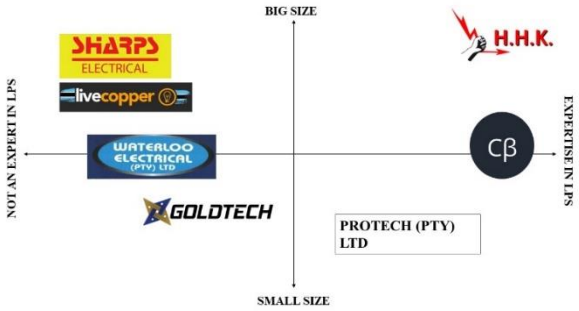


Figure 8: Positioning Map of Players in the Botswana's LPI

Overall Market Sales Potential and Company Sales Potential

To perform this section, understanding that there are two main sales areas, B2B and B2C, will allow an independent study for better comprehension and analysis of the market.

The **B2C** sector, primarily comprising private residential buildings, requires LPS for taller structures to ensure safety during electrical storms (Aplicaciones Tecnológicas 2023). Essential data for a thorough study in this area involves the count of buildings exceeding certain heights, housing communities, or the total building count. Regrettably, neither official government sources nor specialized websites offer this specific data, leading to estimations closely aligned with reality for these figures. For this, it was found the average number of people forming a household in Botswana (3.3 people) (Statistics Botswana 2023), and with the total population of the country (2 588 000) (World Bank 2022), the total number of households can be obtained by subtracting 40% of the population living in slums (470 545) (World Bank 2020). As a result, the total number of urban households is known, but not buildings. Hence, it is estimated that only 5% of these households would require an LPS (23 527), a rather conservative percentage due to the average height of constructions in Botswana is unknown either how many households

live on average in the same building. From here, based on the prices of Company Beta invoices and considering that half of these dwellings may require an LPS installation and the other half only a review, the market sales potential for the B2C sector in Botswana would amount to almost €100 million. According to the company performance in the […] market it is considered to be captured 0.1% of the market potential, given that it is a small country. On the other hand, for the **B2B** sector, there is also a serious lack of information encountered. The desired data for conducting the study would be the number of industrial buildings, which it could not be obtained. Instead, regarding the number of registered companies in the country (24 515) (Statistics Botswana 2022), it has been established that 30% could be potential customers of Beta (7 355). This is due to the primary sectors of Botswana companies, with the highest number being energy, manufacturing, and mining companies, leading to consider that the percentage should be higher than in other countries. For this B2B area, it was also considered gas stations since there is a requirement and high recommendation for these security systems (ZANDZ 2023). Additionally, Company Beta has confirmed it as a highly attractive segment for them. To obtain this information, the number of gas stations in the country was acquired (153) (Datantify n.d.), all of which require LPS. Therefore, assuming that 50% of these companies need LPS installation and the other 50% only maintenance and review, it was estimated that the market sales potential is around €68 million, of which once again, according to Company Beta, they could occupy 0.7%. These two B2B and B2C areas give a total market sales potential of €168 million, of which the company's potential would be €576 195. Also estimated is its growth, increasing by 5% in the first year and 1% in subsequent years. This slowdown in growth is due to the country's small size. Despite urbanization has grown by 10% in the last ten years (Statista 2022), it is preferable

Growth	
CAGR 5% Year	576.195 €
CAGR 1% Year	605.005 €
CAGR 1% Year	611.055 €
CAGR 1% Year	617.165 €
CAGR 1% Year	623.337 €

Table 8: Company Potential Sales Growth

to be conservative in estimations to avoid offering an unrealistic market to the company (refer to Appendix 12 for the entire market potential calculation).

Market Entry Conditions

Navigating the landscape of internationalization in Botswana demands a thorough understanding of trade agreements, regulatory frameworks, infrastructure, financial stability, and prevailing market opportunities. This exploration unveils both the potential and challenges in Company Beta's expansion into this African nation. Regarding tariffs on imports of products into Botswana the situation is favorable since SADC has a trade agreement with the European Union in which 86% of European products are free of tariffs, and in general all electrical equipment related to LPS are exempt from tariffs to import in Botswana (European Commision 2023). Export regulations hold minimal relevance for Company Beta's business model, as the final product typically remains within Botswana or involves components assembled within the country, without an intention for export. Even as the company expands its business into neighboring SADC countries benefiting from a free trade area, export activities from Botswana remain unanticipated (South African Development Community n.d.). In the event of Company Beta expanding its operations to Botswana, it would encounter a comprehensive regulatory environment, coupled with a lower tax rate of 22% compared to other African nations. Although potential eligibility for tax reduction was explored, discussions with the company indicated that such benefits might not apply, leaving their corporate tax rate fixed at the standard (KPMG 2023). Botswana lacks specific regulations governing the installation and enforcement of LPS but adheres to the international standard IEC 62305-2 (Axis-India n.d.). For service-oriented companies like Company Beta, focusing on electrical engineering products, the country participates in regional agreements like AfCFTA, emphasizing intellectual property (IP) rights. AfCFTA aims to bolster IP protection and promotion across Africa, while SADC, although lacking specific regulations, prioritizes strengthening IP rights in its industrialization strategy

to foster regional development and research. The Botswana government's Companies and Intellectual Property Authority (CIPA) safeguards primary IP rights (European Commission 2021). Thirdly, distribution channels are a crucial asset for the good development of a business, in the case of Botswana there is not much information available on the subject, beyond that offered by the International Trade Administration (2022), here the continental character of Botswana stands out as it is landlocked, Botswana's main connections are the Trans-Kalahari Corridor, which connects Johannesburg, Botswana and the port of Walvis Bay, and the North-South Corridor, which connects through Durban through Botswana to Namibia and Tanzania. Botswana's road system is good, with over 32 000 km of roads (Government of Botswana n.d.), however wildlife can be dangerous. The main trading hub is Goborone, and most goods enter through there, although there are also other trading points such as Lobatse, Francistown, Maun, and Kasane/Kazungula (International Trade Administration 2022). Botswana's financial sector, as per the International Monetary Fund (2023), demonstrated resilience amid the pandemic, featuring strong integration between banks and non-bank financial institutions. Despite robust economic recovery, persistent high inflation poses risks, notably impacting a company's profits in another African nation. This underscores the importance of managing inflation rates. Unfortunately, Botswana's indicators also reflect challenges in this area (Statista 2023). According to the International Trade Administration (2022), Botswana faces challenges in attracting foreign companies due to a shortage of skilled workers relative to its population size. Additionally, delays in SADC negotiations have impeded its potential as a logistical hub, and the expanding state presence has restricted access to certain sectors and increased the prominence of state-owned enterprises. However, market opportunities exist, such as support from the Botswana Investment and Trade Centre (BITC), government incentives including tax reductions, a robust mining sector, and the country's political stability and sound fiscal management (International Trade Administration 2022).

Conclusion

Botswana stands out as an intriguing prospect for international expansion. It boasts free trade agreements and strong connections with other SADC countries, alongside lower taxes compared to its neighbors. However, there is a pertinent question regarding the potential impact of Botswana's small size and the market saturation that might arise from dominant players like HHK. These factors could potentially limit the opportunities available to the firm.

6.2. Selection of Target Market

After detailed consideration about the five highest potential markets, Rwanda emerged as the most suitable country for further examination and potential internationalization by Company Beta. This process involved extensive deliberations with Beta, leading to two distinct stages for selection. Initially, two out of the five countries were chosen for more in-depth analyses to compare their potential. Subsequently, the most suitable market was determined.

Firstly, Botswana, Cote d'Ivoire, and Nigeria were identified as more challenging markets for Beta to venture. Botswana, although offering perhaps the most stable conditions out of every country analyzed, displays a much smaller sales potential when compared to the other countries, especially due to its low population size. Moreover, the presence of competitors from South Africa poses pricing pressure, and having already an established relevant customer base, makes market penetration challenging for Company Beta. Cote d'Ivoire, with a strong French-based heritage, is akin to Botswana, already having established companies focused on LPS solutions, but, in this case, mainly from France, one of the main sources of the active LPS product range which the company sells. Furthermore, […] increases the probability associated with product sourcing changes, making the expansion a much riskier endeavor. Finally, Nigeria presents the least favorable business conditions among the five countries due to high bureaucracy and inadequate infrastructure quality. Consequently, it would complicate the company's component assembly process, leading to higher tariffs and transportation costs. Thus, South Africa and

Rwanda were chosen for further examination due to much higher market potential, and conducive business environment, respectively.

In the subsequent stage, Rwanda emerged as the most suitable market. Despite the much higher sales potential of South Africa, its greater stage of development attracted international players, potentially resulting in slim profit margins and limited market access for Beta, as pointed by its GM. Moreover, Beta's narrow network in the region can prevent reaching smooth operations in the first years, which can jeopardize the company's liquidity and solvency. Even though, Rwanda presents one of the lowest sales potentials out of the five markets, it provides conducive business conditions and has few major players in the LPI. So, it will likely make Beta reach higher product margins and increased market share during the first years of operations. Moreover, Rwanda's strategic location facilitated the final decision, as it was already a factor previously considered by the GM when deciding to internationalize the company.

7. International Entry Strategy

7.1. Selection Criteria

The choice of an Entry Mode Strategy (EMS) stands as a critical step for international expansion for SMEs, where resources commitment must align with risk mitigation (Lin and Ho 2018). Studies indicate that SMEs display various behaviors in their EMS, ranging from passive adoption based on emergent foreign country agreements to active engagement involving systematic evaluation of entry options (Musso and Francioni 2014). Thus, the EMS extends beyond simple market research, requiring an analysis of the company's internal (size, international experience, product complexity and competitive strategy) and external factors, transaction specific criteria, and desired outcomes. Firstly, the size functions as a boundary condition within the internationalization process, as it shapes the FSAs and its resource availability, thereby influencing the speed, scale, and the firm's commitment level (Child, Karmowska and Shenkar 2021, Lin and Ho 2018). Consequently, the desired level of control

influences the firm's preference for FDI over other international involvement forms (Lin and Ho 2018). Despite Beta's micro size, its international experience in […], shapes its preference for maintaining control over Rwandan market entry due to resource limitations and weak financial standing. Engaging in a shared equity partnership would likely result in a relatively small portion of equity for Beta, making it more inclined to preserve decision-making autonomy instead of ceding control. Additionally, despite venturing into new markets allowing a firm to capitalize on market opportunities and gain access to a larger business network (Cieślik, Kaciak and Welsh 2012), it demands a deep understanding of market externalities connected to demand and supply, competition intensity, and trade barriers (Johanson and Vahlne 1997). Currently, Beta faces challenges related to demand and supply due to the absence of information concerning the Rwandan LPI and its competitive landscape, further compounded by Beta's dependency on many suppliers based in Europe, as the geographic distance coupled with the demand uncertainty can lead to prolonged response times, making the company lose potential clients. While not risk averse, Beta lacks flexibility to face the unknown due to the aforementioned constraints, favoring entry modes that facilitate local market knowledge acquisition (Begen, Pun and Yan 2016). Moreover, Rwanda's favorable business environment, evidenced by its high Ease of Doing Business Index and EU strategic partnership (European Union 2021), suggests a strong, albeit uncertain, competitive landscape, inclining Beta for a resource-light entry strategy in the market and favoring the use of intermediaries to leverage the business development in Rwanda. Lastly, Beta should assess the transaction-specific criteria, such the required know-how and transaction costs associated with its foreign mobility. While its expertise helps navigating LPI's dynamics, it can be offered as a trade-off, allowing Beta to equitable partner with a Rwandan company for mutual benefits (Yaqub 2009), helping surpass aforementioned constraints. Ultimately, Beta's evaluation of risk aversion, willingness of losing control, flexibility to face the unknown, and resources availability, will shape its EMS.

And, given the financial constraints, Beta should pursue an EMS that minimizes its initial investment, without compromising its business model, and internationalization goals.

7.2. Analysis of Alternative Entry Modes

Entering new markets offers companies the opportunity to tap into potential growth and widen their business network (Cieślik, Kaciak and Welsh 2012). So, to ensure a successful foreign entrance while balancing resource commitment, productivity, and organizational control, the company must adopt an EMS that optimizes its internationalization benefits (He, et al. 2020, Hill, Hwang and Kim 1990, Woodcock, Beamish and Makino 1994). Currently, businesses can choose from varied entry modes to go overseas. The most popular entry mode across SMEs is **exporting** due to its low-risk, inherent high flexibility, and minimal resource commitment. Thus, it enables firms to maximize earnings gradually while exploring innovative opportunities abroad (Gkypali, Love and Roper 2021). Conversely, a **wholly owned subsidiary** is a high-control entry mode (Woodcock, Beamish and Makino 1994) where one parent firm owns an organization in a foreign country (Zeira and Shenkar 1986), minimizing the risk of knowledge dissemination (Hill, Hwang and Kim 1990). However, it requires substantial investment commitment as it involves penetrating markets without sharing costs with other entities (Chang, Chung and Moon 2012). So, a company lacking sufficient resources and aiming to diversify risk is compelled to enter the market by forming a **joint venture** (Woodcock, Beamish and Makino 1994), in which two or more firms share resources to create a jointly owned organization. In this case, joining forces with a local knowledgeable company can provide immediate market access (Lu and Beamish 2005). However, control must be shared with venture partners, which is contingent upon the type of ownership and the number of parties involved. Nevertheless, in establishing such entry mode, both companies must perceive the risks involved. In cases where risks are high and resource commitments are a concern, acquisitions become the optimal solution (Woodcock, Beamish and Makino 1994). A

successful **acquisition** demands strategic alignment between the acquirer and target firm, and to proactively anticipate its investment needs, implementation hurdles, and cultural differences impact (Gomes, et al. 2012). In the context of cross-border acquisitions, keeping the target's owners as partners can reduce the acquirer's operational costs (Bai, Girma and Riaño 2023). Oppositely, for small firms seeking collaborative partnerships without relinquishing control, **strategic alliances** emerge as highly promising options. This entry mode, characterized by a voluntary and cooperative partnership among firms, involves resource pooling to enhance competitive performance and creates value while preserving individual identities (O'Dwyer and Gilmore 2018). However, this type of partnerships carries risks like potential opportunistic behaviors, and clashes in organizational cultures (Yaqub 2009). Irrevocably, understanding these entry modes dynamics is critical for small firms aiming to effectively cross-borders.

7.3. Entry Mode Selection

Globalization has urged enterprises to expand internationally (Vendrell-Herrero, Gomes and Mellahi, et al. 2017) to reach new markets, access more knowledge, and adapt accordingly to the foreign market (Ripollés, Blesa and Monferrer 2012). Nevertheless, the entry mode for international expansion, dictates a company's success (Ripollés, Blesa and Monferrer 2012). For Beta, considering its resource availability and response capabilities to international pressures, forming a strategic alliance with an established company in Rwanda emerges as the strategic move that will reduce its resource commitment, liability of smallness, and the risk associated with the foreign entry by leveraging the local partner's knowledge and connections (Lu and Beamish 2005). Consequently, this approach will enhance Beta's organizational competitiveness within Rwanda's dynamic, and uncertain, business landscape (O'Dwyer and Gilmore 2018). Further, Beta should conduct thorough due diligence before building alliances, to guarantee goals alignment and a robust client base in need of lightning protection solutions. Concurrently, and by contacting Beta's GM, the strategic alliance must be vertical with entities

in the following industries: oil and gas, construction, mining, and government agencies, to create and capture value for both allies, fostering a resource-based alliance and maximize the outcome for both (O'Dwyer and Gilmore 2018). And, to ease this process, Beta already established connections with companies in Rwanda, like […] – both companies that work with a vast range of industries. To prove the alliance's potential, Beta can apply the following two approaches: under a contract, offering its LPS to protect the partner's business portfolio, providing customization, installation, and maintenance for new clients; for pre-existing clients, the collaborating firm will earn a commission based on the LPS sales they generate if they efficiently act as intermediaries. Despite the strategic alliance, as Beta enters Rwanda as a wholly owned subsidiary, it should consider take a greenfield investment to set infrastructures tailored to its needs (Ha, et al. 2021), preserving its business model's quality control and operational flexibility. However, the alliance will not cover Beta's need for funds when entering Rwanda, but it has the ability to replicate the wins of Beta's prior international experience in […], serving as a guide for its entry in Rwanda (Ti, Ng and Rasiah 2022).

8. Marketing Plan (B2C and B2B)

8.1. Marketing Objectives (Short and Long-Term)

Expanding into foreign markets demands innovative marketing strategies for companies to thrive and survive amidst heightened competition (Paun, Compeau and Grewal 1997). Hence, marketing objectives must dissect the company's functional areas to be in alignment with the core business model and cultural nuances (Berndt, Altobelli and Sander 2022). By using the SMART method (Bjerke and Renger 2016), Beta will be able to shape these objectives and maintain a balance among them, without overemphasizing exposure to risks, such as consumer resistance, as it can impact product acceptance and purchases (Berndt, Altobelli and Sander 2022). These objectives can be refined at both strategic and tactical levels, gaining specificity through diverse marketing tools, and integrating both B2B and B2C segments.

In the short-term, Beta must set the following three objectives, each with specific timeframes and key performance indicators (KPIs) in mind. Foremost it is to **establish brand recognition**, aiming to build trust and visibility, which will involve the organization of webinars and conferences focused on lightning protection best practices and emerging technologies in the LPI. Beta's success in this endeavor will be measured by the number, still to be defined, of industry professionals and clients that engage with these initiatives in the first year, consolidating its reputation as an industry expert. Simultaneously, **expanding the customer base** stands as a core objective driven by Beta's internationalization strategy. The company targets acquiring a specific number of new customers within the initial operational period, a goal influenced by the implementation of the advised strategic alliance, contributing to increase profitability, and bolstering the efficacy of the brand awareness initiatives. Lastly, to improve customer experience, Beta must plan to enhance its digital content on its **website**, turning it **more informative and appealing**, through incorporating, for instance, explanatory videos demonstrating the functionality of its LPS. To gauge success, Beta first needs to establish itself as a brand and then it should establish specific targets for the bounce rate and average session duration, as this will indicate improved user engagement and satisfaction. Following its entry into the Rwandan Market, Beta should shift its focus towards defining long-term objectives to solidify its presence and capture a significant market share in the LPI. Firstly, following the initial short-term objective, Beta aims to **enhance brand equity and become a strong brand renowned for reliability, expertise, and excellence in LPS** within the Rwandan LPI over the next five years. This entails measuring the annual growth rate of sales and customer retention. Secondly, Beta intends to **diversify its product portfolio by introducing SPD solutions** to cater to the evolving market demands and boost its competitiveness once it has a solid foothold and gained reasonable recognition. Alongside, success should be quantified throughout the years by the percentage revenue contribution of this introduction. Lastly, Beta is committed to

leading by example in sustainability practices, taking a proactive stance on using sustainable materials, technologies, and practices in the LPS transportation to significantly reduce CO_2 emissions. Therefore, the rate of success for this objective is measured by calculating the percentage reduction in emissions per transportation. Besides, its achievement should be an ongoing and continuous effort within Beta's operations, thereby not having a specific implemented timeframe, but rather being a persistent focus in the firm's long-term strategy.

8.2. Segmentation

Segmentation will allow Beta to identify the different subgroups of clients that have the same needs and are sensitive to Beta's offerings (Brooksbank 1994), to further shift its efforts on aligning business developments to its needs in Rwanda in both B2B and B2C segments.

The B2C segment, characterized by a diverse array of residential properties such as townhouses, villas, single residences, residential buildings, and community of neighbors, forms distinct customer segments, showcasing significant market heterogeneity. And the market potential analysis underscores a pressing need from these segments for lightning protection solutions to safeguards its properties as a lack of a LPS jeopardizes the integrity of buildings and poses significant risks to occupants (Bullis, Pundure and Jemeljanovs 2021). However, formulating a singular, all-encompassing persona within this segment is challenging due to the extensive diversity among properties and occupants, which may not generate actionable insights that adequately serve Beta's B2C segment. **The B2B segment** was shaped by analyzing Rwandan market composition and leveraging on GM's knowledge to select appealing segments within this niche market. So, one relevant segment is **Hypermarket Chains** as they present an infrastructural need for lighting protection systems due to their high visitor footfall, which demands high safety measures, and valuable inventory that can suffer from electrical discharges. However, even though this segment was representative for Beta in Portugal, Rwanda's retail landscape, dominated by smaller supermarket chains within larger buildings,

indicates a more limited demand for Beta's offerings. Moreover, **the Mining Sector,** due to historical electricity reliance, it necessitates equipment to prevent electrical faults and lightning-induced incidents (Gomes 2017). Similarly, **the Construction Industry**, governed by safety protocols and mandatory regulations for lightning protection in Rwanda, finds LPS installation and regular inspections crucial for compliance, which Beta provides. Also, **the Energy Sector**, operating with highly flammable materials and focused on infrastructure development of gas stations, power plants, and solar or wind power installations, requires protection against lightning-induced disasters to minimize economic losses (Hernandez, Vidal and Jurdo 2008), showcasing relatively inelastic demand. Finally, Government-owned buildings, renowned for stability in revenue generation, stand out due to Beta's prior experience with the […] army, and due to its infrastructural spectrum composed by hospitals, social housing units, and others. Overall, these segments set the stage for a growth prospect analysis as it will help optimize Beta's marketing investments, differentiate the business, and nurture lasting customer relationships within these diverse market segments (Moutinho 2000).

8.3. Targeting

In the quest to identify prime market segments in Rwanda, in collaboration with Beta, the most attractive segments were strategically targeted. As a result, Beta's targets upon entry in Rwanda will be the construction segment for both B2B and B2C segment, and then the energy sector, exclusively earmarked for the B2B segment. However, to reach the result, a comprehensive analysis was pursued, considering key parameters defined by Beta's GM such as segment size, growth potential, accessibility, and potential profitability.

Primarily, **the Mining Sector** in Rwanda boasts 78 registered companies with mineral exploitation rights, contributing 3% to the country's GDP (Rwanda Development Board 2023), which holds approximately 369 mining explorations (Rwanda Water Portal n.d.), having experienced a commendable 13% production growth between 2021 and 2022 (Rwanda National

Institute of Statistics 2023). Despite mining activities being exposed to lightning strikes and electrical hazards, which entails crucial needs for safeguarding the explorations, valuable equipment, and workers, the sector exhibits certain challenges, such as stagnation and considerable risks related to commodities and Environmental, Social, and Governance (ESG) aspects (KPMG 2022). Moreover, **the Government-Owned Buildings** segment comprises around 7 539 structures, with plans to repurpose approximately 1 000 idle state-owned buildings (The New Times 2023). Also, the government is actively pursuing housing initiatives to urbanize the country, notably through programs like Affordable Housing, launched by the Rwanda Housing Authority in 2023, which is attention-grabbing for Beta due to its prior experience in similar projects. However, uncertainties persist regarding specific service needs for Government-Owned Buildings in Rwanda, adding to the uncertain complexities revolving around Otowa's existing agreement with the government. Therefore, resulting in the final decision of not prioritizing this segment during Beta's initial entry in Rwanda. Nonetheless, Beta's focus shifted towards **the Construction** and **Energy Industries**. Firstly, contributing 8% to Rwandan GDP (Rwanda National Institute of Statistics 2023) and with an expected CAGR of 6% until 2026 (Research and Markets 2019), the Construction sector exhibits promising potential. Its market potential estimations suggest an annual demand for lightning protection solutions for 163 corporate buildings for the B2B segment (refer to Appendix 10) and, based on the percentage of houses requiring LPS (refer to Appendix 10), 400 residential units for B2C segment, considering the country's housing requirements (IDN 2016). However, challenges related to cost sensitivity, resistance towards expensive inspections, and unclear insights into specific needs could impact the sector's attractiveness for the B2C segment (VFC 2020), limiting its accessibility by Beta. Likewise, the Energy Industry in Rwanda portrays substantial potential in the B2B segment, evident from the surge in gas stations from 150 in 2012 (Rwanda Environment Management Authority 2012) to an estimated 322 today (refer to

Appendix 10 for further details). Currently, there are 41 operational energy generation plants, with 38 more in development (MININFRA 2019). This substantial escalation, complemented by the expansion efforts of major petrol companies like Total Energies, Lake Petroleum, and KenolKobil (RDB 2022, Lake Petroleum n.d., Monitor 2018), the remarkable increase in the number of gas stations, and the expansion of energy generation plants, underscores the robust growth of the Rwanda's Energy Industry. Accordingly, this signifies a heightened demand for Beta's offerings due to intensified safety protocols within these establishments, akin to the mining industry's need for year-round maintenance due to flammable materials present in these infrastructures. Largely, these segments stand as catalysts to Company Beta's expansion in Rwanda, fostering substantial projects and infrastructures that present significant potential in generating considerable revenue streams and crucial networking opportunities for the company.

8.4. Positioning

Following the identification of the most promising market targets, the company should then strategically position itself vis-a-vis competitors and define a unique value proposition tailored to meet the targeted customers' needs (Avery and Gupta 2015). Considering construction companies' needs, the affordability of the solutions, installation quality, and timely delivery hold significant importance in the awarding of contracts and maintaining credibility (Lambropoulos 2013). However, while some competitors exert control over their variable costs by producing their own solutions, Beta should look to highlight its superiority in its sales and after-sales process. So, after identifying the value proposition, the company must define a positioning statement that holds internal significance, centering on the value proposition and on the target audience whose needs align with the brand's offerings. Moreover, acknowledging the current competitive landscape aids in establishing a benchmark for comparison with other industry competitors, which will emphasize the reason to believe in the communicated value (Avery and Gupta 2015), solidifying the company's credibility and unique position in the

market. Thus, Beta's positioning statement should be: *For construction companies looking for the best protection on their buildings, Company Beta is the only lightning protection company providing a convenient, quality-driven experience with LPS because of its great and experienced involvement in designing, installing, and maintaining any solution*. Finally, a worthwhile comparison to make in terms of positioning is how the consumers will perceive the company's offering vis a vis the competitors', which allows the identification of gaps or crowded sections (Avery and Gupta 2015). For that, a perceptual map was elaborated (see Figure 9), focusing on the quality of the offerings and the convenience of the provided services. And, although the good performance of Company Beta in both dimensions seems challenged by Otowa Electric Co., the product portfolio of the latter is much more focused on SPDs, allowing Beta to potentially leverage on its differentiation focus.

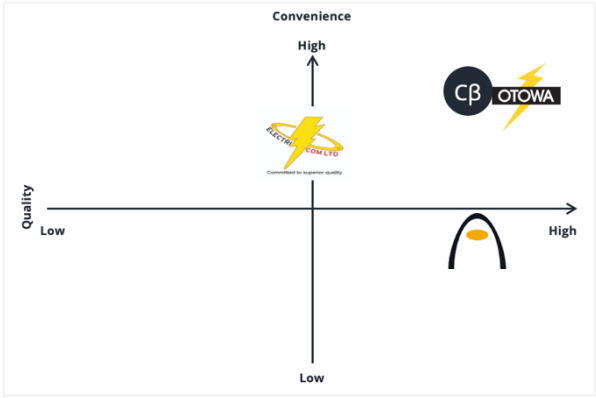


Figure 9: Company Beta's Perceptual Map by considering Rwanda's Competitive Landscape

8.5. Marketing Mix (7 Ps)

The Marketing Mix framework devised for Beta revolves around the 7Ps (Product, Price, Place, Promotion, People, Process, and Physical Facilities) (Ivy 2008), showing the beneficial elements that help configure Beta's offerings according to customer needs (Khan 2014), in this according especially to the B2B targets, leading to a robust market presence.

Firstly, Beta's **product** must congregate all benefits to meet customer needs (Ivy 2008), and, to complement its definition, the Customer-Value Hierarchy will be used (Kotler and Keller 2016), analyzing the product from five perspectives: its core benefit, and generic, expected, augmented, and potential products. Subsequently, ***the core benefit*** stands as the competitive edge the consumer is purchasing, which is the high quality that Beta's offerings are

characterized for. Moreover, ***the generic level*** results from the elements that deliver the referred edge, shown by the tangible product, i.e., the LPS. Moreover, ***the expected product*** is characterized by what the client expects from Beta, which is the high-quality installation of the LPS that guarantees compliance with industry guidelines; and, ***the augmented product*** goes beyond the installation, focusing on what exceeds customers' expectations which is represented by Beta's maintenance service, in which the LPS is revised to guarantee its effectiveness over time. The ultimate stage is ***the potential product***, encapsulating all potential developments the product could undergo in the future, which can be for Beta the expansion of portfolio with the SPD insertion in Rwanda. As Beta's strategy encompasses differentiation, its focus ends up revolving highly in **pricing**, since it can affect the client's perception about Beta's offerings quality (Ivy 2008). Consequently, the firm adopts a cost-based pricing strategy, factoring in production costs and applying a markup to set selling prices to maintain profit margins (Guilding, Drury and Tayles 2005). According to Beta's GM, the estimated costs for goods sold are approximately €5 000 for B2B installations, while maintenance costs are around €350. On top of these costs, the company applies a markup to establish the final price, incorporating a gross margin of 67% for both types of installation, and 90% in maintenance services. Concerning **place**, the method chosen by Beta to distribute its offerings in a way that meets clients' expectations and needs (Ivy 2008) focuses on implementing a warehouse in Kigali to facilitate operations and nationwide accessibility, and to enhance customer communication and accessiblity, the company will leverage online platforms like its website. Concurrently, Beta's **promotion** tactics to provide information to clients (Ivy 2008) entail a diverse mix of direct interactions, trade fairs, conferences, and online presence. Beta services' intangible character demands to consider its **people** as a tool to enhance customer acquisition and retaining, since it recruits certified technicians and field agents to create services deliveries with professionalism. Also, Beta's **processes** comply with its operations to effectively delivery value to the client,

such as the customization service, installation, and maintenance, while aiming to incorporate sustainability measures into its processes to accomplish the aforementioned long-term objective. Lastly, **services' physical evidence** consists of the tangible elements its offerings have that prove its quality (Ivy 2008), which in Beta's case will be revealed by its short-term objective implementation of utilizing informative visual content, conduct conferences, and affix quality labels to its infrastructure to strengthen credibility and reinforce its commitment to quality. Overall, the integration of these elements within Beta's marketing mix is essential to craft a compelling marketing strategy that emphasizes differentiation, customer-centricity, and market responsiveness, setting the stage for sustained success within the industry.

9. Financial Forecast

9.1. Assumptions

To start the financial forecast analysis, it was considered that the Compound Annual Growth Rate (CAGR) is equal to 6% (Precedence Research 2023). For the operating cash flows, the LPS sale value and installation and price for maintenance are expected to remain constant during the first 5 years of activity of company beta in Rwanda, as well as the costs of goods sold, selling and administrative costs such as the warehouse rent, accounting costs and marketing and personnel costs. Additionally, it was considered that all target sectors grow at the same CAGR of 6%. For investment cash flows, the company is firstly assumed to make use of leases to get access to the needed assets across the five-year analysis of the project and, to minimize costs with tariffs and inventory holding, it was assumed the company will only start building its inventory stock once the warehouse is rented, in the first month of 2024, after the first project has been selected. Additionally, the company was expected to keep the same target for holding, collection and payment periods across the analysis.

9.2. Market Size and Market Share Estimation

To start the financial forecast, it was necessary to estimate the expected market size of the Lightning Protection Systems industry in Rwanda for Beta, considering Rwanda's potential market size previously defined and reducing it to the target industries defined. Firstly, for the B2B sector, the Construction industry was considered, more specifically the commercial buildings that will be built in the next years, and some infrastructures of the Energy industry as Gas Stations and Energy generation plants. For the B2C sector, only the Construction Industry was considered, more specifically the residential buildings that will be built in the next years. After this study, Company Beta was asked about the percentage of buildings that would require LP systems to comply with the security regulations imposed by the Rwandan government. The company considered that 100% of non-residential buildings and infrastructures would be required to have LPSs, while only 40% residential buildings would require them. Finally, the final market sales potential was calculated by applying the expected market share. It is necessary to consider that this market and industry have very different characteristics and that for this reason, it is difficult to estimate the possible market share of Beta in Rwanda, as there is not much information on the market share of competitors in the market and its evolution over the years. To estimate Company Beta's market share in its first year of activity in Rwanda, it is necessary to consider the competitors that are already established in the market such as Electricom Rwanda, Aplicaciones Tecnológicas S.A and Otowa Electric Co., Ltd. which together hold around 80% from the market. In addition to these big players, there are other small-medium companies that hold other parts of the market. Additionally, given the strategic alliance as the entry mode, the company will possess more resources and a greater reputation to develop a decently sized client base. The targets to be pursued were first the construction industry, with a focus on corporate buildings, and secondly the energy industry. Taking these facts into account and the considerations of Beta's directors, it was considered that it would be

correct to estimate a market share of 15% for the B2B clients in the construction industry, 2.5% for the B2C clients in the construction industry and 1% for the clients in the energy industry. Therefore, considering all the infrastructures mentioned in the B2B and B2C sectors and the market share, Company Beta will be able to count on a potential market of around 38 infrastructures, of which 28 are oriented towards B2B and 10 towards B2C.

9.3. Operational Plan

Revenue Estimation

Considering the market estimates and potential customers previously calculated, it is possible to estimate the revenues of Company Beta's operations in Rwanda for the coming years. To carry out this revenue estimation was first necessary to understand what products and services would be offered by Beta in the Rwandan market and the respective prices. The company's directors wish to maintain the same business model present in Portugal and […], that is, the offering of lightning protection systems, their installation, and their annual maintenance. Regarding prices for B2B clients, Company Beta established that the LPS selling value and installation will be €15 000, and maintenance will have an average value of €3 500. For B2C clients, the LPS selling value and installation will be €7 500, and maintenance will have an average value of €1 000. The big challenge was understanding how to evaluate the level of occurrence of each of the sales and services provided. After some evaluation and with the support of the Company Beta, it was considered that during the year the sale and installation of LPS represent around 20% of total revenues since, in the long term each customer will only acquire this product and service once. The occurrence of maintenance services for these systems represents 80% of total revenue, as it is a service that must occur every year for each of the LPS installed. After these considerations, was possible to achieve an initial estimation of sales revenue and services revenue of €187 885, escalating to €237 200 after 5 years considering a CAGR of 6% (Precedence Research, 2022).

Cost Estimation

Analyzing the costs that are incurred during the activity, the information provided and fully documented in Appendix 10 by the directors of Company Beta was once again considered , and it was conveyed that the **Cost of Goods Sold** is constituted by the Cost of Installed Material with a value of €5 000 for B2B clients and €2 500 for B2C clients, the €350 Cost of Maintenance Material and €175 for B2B and B2C clients respectively, the transportation costs that represent 15% of the cost of material and the tariffs are approximately 21.25% of the cost of the material. Additionally, there are the **Selling and Administrative Costs** that are important to consider, such as the rent of a warehouse (calculated from the warehouse Sqm needed and the rent per sqm per month), electricity costs, equipment leasing, accounting costs, marketing costs, and **Personnel Costs**, which includes expenses for the salaries of employees. Accounting for all costs, it was possible to initially estimate a cost of goods sold of €58 299, selling and administrative costs of €45 772 and personnel costs of €81 019. After five years, these costs will be €73 601, €41 055, and €104 114 respectively.

P&L Statement

Considering the Sales and Services revenues, the costs of Goods sold, the seeking and administrative costs, and personnel costs, Company Beta ends up in the initial internationalization scenario with an EBITDA of €2 795, after deducting the corporate tax expenses it is possible to obtain a Net income and consequently operational cash flows worth €1 957 which after 5 years will increase to a value of €12 901. Company Beta will have, in its first year of activity in Rwanda, according to estimates, a similar performance to its activities in Portugal and […]. However, it is expected that within 5 years there will be growth that

exceeds these results. It is important to note that the defined internationalization plan allows the company to achieve positive results from the first year.

	2024	2025	2026	2027	2028
Cash Flows					
Sales and Services Revenue	€ 187 884,69	€ 199 157,77	€ 211 107,24	€ 223 773,67	€ 237 200,09
Cost of Goods Sold	€ 58 299,12	€ 61 797,07	€ 65 504,89	€ 69 435,19	€ 73 601,30
Selling and Administrative Costs	€ 45 771,96	€ 45 771,96	€ 41 054,96	€ 41 054,96	€ 41 054,96
Personnel Costs	€ 81 018,60	€ 81 018,60	€ 88 717,20	€ 95 316,00	€ 104 114,40
EBITDA = EBIT = EBT	€ 2 795,01	€ 10 570,14	€ 15 830,19	€ 17 967,53	€ 18 429,44
Corporate Tax Expenses	€ 838,50	€ 3 171,04	€ 4 749,06	€ 5 390,26	€ 5 528,83
Net Income	€ 1 956,51	€ 7 399,10	€ 11 081,13	€ 12 577,27	€ 12 900,61
Operational Cash Flows	€ 1 956,51	€ 7 399,10	€ 11 081,13	€ 12 577,27	€ 12 900,61

Table 9: Company Beta's Cash Flows

Operational Risk Analysis

After making some predictions on Beta's internationalization operational plan, it is possible to identify some operational risks that reveal the uncertainties and some problems that Beta may face, from the lack of optimization of the assembling process, human resources, costs, logistics and transportation to the rivalry potential in Rwanda. The first risk identified was the nature of the competitors that are present in Rwanda, companies that have a large business, turnover and LPS industry dimension, which allows them to achieve strong scale advantages and lower material costs and consequently provide their customers with lower prices. Something that could also represent a risk will be the costs of the materials that will be installed, as Company Beta's initial strategy will be to maintain its European suppliers and transport these materials from Portugal to Rwanda due to the confidence in the quality provided by these suppliers to guarantee the continuation of excellent work. This strategy, despite having some positive points, will result in higher costs for Company Beta, which puts them at a disadvantage compared to their large-scale competitors. Another risk associated with this strategy will be transport costs, as, according to estimates, it will not be cheap to transport mostly heavy goods from Portugal to Rwanda. The Human Resources also represent a risk for Company Beta's activities since the company has faced some problems in retaining trained, young, and motivated workers in the Portuguese and […] markets, so it is very likely that this problem will also occur in the Rwandan market, due to its lower literacy rate (76%) (World Bank 2022) than

in Portugal and very similar to […]. It is possible to assume that these risks will be mitigated once Company Beta establishes a position of greater power in the Rwandan market, having the opportunity to meet, contact, and form partnerships with local suppliers that guarantee the supply of materials with the same quality at a lower cost, and consequently, reduce transport costs.

9.4. Investment Plan

Company Beta does not possess a strong liquidity position and investment capacity in both Portugal and […]. Additionally, as discussed with the company's General Manager, just as with the […] subsidiary, the company prefers not to rely on debt financing in Rwanda. Therefore, and considering the choice to enter the country with a greenfield investment, the company will not have the means to acquire any needed property on its own, and, instead, will have to look for a rental warehouse in Kigali. Furthermore, machinery and vehicles will not be necessary, as the company does intend to produce nor transport its own goods, and the company prefers to rely on operational leases for the needed office equipment, as done in […]. Finally, given the establishment of a company in Rwanda has no additional costs, the specific industry does not require any licenses, and that company is likely to follow the […] subsidiary approach of not having any intangible assets, CAPEX is not expected to exist in the first five years of operations in the country. As the company is not expected to invest in assets in the forecasted period, inherently, they will not be able to sell goods other than its inventory and, therefore, no salvage value is expected to occur between 2024 and 2028.

The sole contributor to the investment cash flow amount is, therefore, the investment in net working capital, which analyzes the changes in inventories, accounts receivable and accounts payable. To get to an estimation on the averages on the inventories, the […] subsidiary was taken as a reference point, using its target holding period of 66 days, which notes the need to keep inventories to a minimum to minimize holding costs. This is due to the fact that LPS

solutions are usually specific to each project, making it more difficult to find other suitable clients, and may become obsolete, occupying some of the allocated warehouse space. Secondly, the target collection period of 60 days and the target payment period of 45 days, used both in Portugal and […], were used. This signals that, although the company intends to minimize credit payments on its projects, prioritizing cash payments or bank transfers, to guarantee liquidity to pay back the current suppliers, a short-term window will be provided to guarantee a favorable relation with the client base. Given the slightly larger holding and collection periods when compared to the payment period, the investment cash flows for the project are expected to remain negative across the duration of the project, becoming increasingly more negative.

	2024	2025	2026	2027	2028
Capex	0	0	0	0	0
Asset Sales	0	0	0	0	0
Investment in Net Working Capital					
Inventories	€ 10 483,41	€ 11 112,42	€ 11 779,16	€ 12 485,91	€ 13 235,06
Receivables	€ 30 885,15	€ 32 738,26	€ 34 702,56	€ 36 784,71	€ 38 991,80
Payables	€ 7 187,56	€ 7 618,82	€ 8 075,95	€ 8 560,50	€ 9 074,13
Net Working Capital	€ 34 181,00	€ 36 231,86	€ 38 405,77	€ 40 710,12	€ 43 152,73
Change in Net Working Capital	€ 34 181,00	€ 2 050,86	€ 2 173,91	€ 2 304,35	€ 2 442,61
Investment Cash Flows	(34 181,00) €	(2 050,86) €	(2 173,91) €	(2 304,35) €	(2 442,61) €

Table 10: Company Beta's Investment Cash Flows

9.5. Financing Plan

Considering that Rwanda offers worse credit conditions than Portugal, with a much higher interest rate on loans, 16.39% (Knoema n.d.) having financial leverage becomes unappealing for the company, which should opt, instead, for an all-equity capital structure. In this way, not only is the company able to have a greater degree of earnings to reinvest in its future growth but it also minimizes the chance of running into solvency problems, avoiding possible costs of financial distress. It is, however, worth mentioning that, with the aforementioned contract-based strategic alliance, the company may have to pay in the first two years of the project a commission that could be estimated by a percentage of Beta's profits to the larger, more established company, given the resource sharing and increases in contacts inherent to the deal.

9.6. Financial Viability

To get the discounted cash flows for the project, a rate of return of a comparable project needed to be computed. Whilst the WACC is one of the most common options, it is only suitable for projects with the same level of risk as the firm (Arnold and Crack 2004), which is not the case with the internationalization to Rwanda. As such and given the lack of publicly listed companies in the industry, the return on equity of the Portuguese enterprise, 14.42% was used as the suitable discount rate for the project.

Net Present Value (NPV)

The Net Present Value of a project is obtained by the sum of the present value of the project's cash flows. If a NPV is positive, companies should accept undertaking the analyzed project (Berk and DeMarzo 2016). As such, summing the discounted cash flows of the internationalization, we get that the company is expected to have a positive NPV of €2 413.77, hinting that, if all goes according to the regular scenario's budgeted inputs, the company should invest in its expansion to Rwanda.

Payback Period

The payback period considers the number of periods needed to break even from the initial investment of the project, despite ignoring the time value of money and the cash flows after payback (Berk and DeMarzo 2016). As there is no initial investment, with investing cash flows only happening across the years of the project, the benchmark used to assess payback was the cash flow from the first year, heavily influenced by the investment in Net Working Capital. By adding the cumulative free cash flows, it is noticeable that the project takes 3.74 to recoup 2024's expected loss, which indicates a higher degree of risk for the project.

Profitability Index

The profitability index measures how large the NPV of a project is in comparison to its initial investment through a ratio between both, which, if greater than one, indicates the viability of

the project (Berk and DeMarzo 2016). For this project, however, the fact that there are no initial investments makes this metric impossible to compute.

Internal Rate of Return (IRR)

The internal rate of return is the rate of return which converts the NPV value to 0, that is, that makes the present value of future cash flows equal to the initial investment. For an investment project such as the internationalization to Rwanda, the company should accept the project if the IRR is above the project's rate of return (Berk and DeMarzo 2016). Given the lack of initial investment and the positive cash flows after the first year of operations, the IRR would need to be infinite to set the NPV to zero, and, as such, the internationalization should be followed through. Nevertheless, since all these decision metrics are focused on the forecasted variables and, naturally, there may be unexpected changes in some of the assumed inputs, we need to test the robustness of the project to numerous variable changes and scenarios to see its full viability.

	2024	2025	2026	2027	2028
Free Cash Flows	(32 224,50) €	€ 5 348,24	€ 8 907,22	€ 10 272,92	€ 10 458,00
Discounted Free Cash Flows	(28 162,84) €	€ 4 674,14	€ 7 784,53	€ 8 978,10	€ 9 139,85
Discount Rate	14,42%				
NPV	€ 2 413,77				
Cumulative Free Cash Flows	-	26 876,25 € -	17 969,04 € -	7 696,11 €	2 761,89 €
Payback Period	3,74				

Table 11: Financial Viability Elements

9.7. Sensitivity and Scenario Analysis

In this financial forecast, the group considered it important to conduct a Sensitivity and Scenario analysis. Sensitivity analysis will help to understand and visualize the change in the outcome, more specifically in the NPV, when there are changes in the values of the inputs chosen for the analysis (only a maximum of two inputs can be analyzed). This analysis will provide an in-depth assessment and analyze the probability of failure or success of given variables (Corporate Finance Institute 2023). The Scenario analysis allows to calculate the value of an investment considering changes in several variables, and unlike Sensitivity analysis, it can ensure an optimal allocation of resources as it considers all the desired outputs.

Sensitivity Analysis

The previous numbers that were estimated when analyzing parts 9.2 to 9.6 of the report are never guaranteed, as the future is never flawlessly predicted in budgeting analysis. As such, a sensitivity analysis was firstly conducted, mostly using two dimensions, seeing how changes in the more volatile and impactful variables to the model would affect the NPV.

In order to give a larger overview, a **Sensitivity Analysis** showing the impact on the Net Present Value was included, considering the LPS sale and installation price and respective maintenance price for the B2B and B2C clients since the prices charged by companies have a great impact on demand as well as its variation. By analyzing these indicators, it is possible to verify that Company Beta is very sensitive to changes in prices charged in both customer sectors, as a decrease in prices represents the transition to a negative financial situation, in fact, the valuation ranges from € (146,198) to €151 025 for the B2B market and from € (21 110) to €25 938 for the B2C segment. To analyze the costs of goods sold, the costs of the installed material and the cost of maintenance, for B2B and B2C clients, and the transportation costs were considered, since COGS is one of the operational risks highlighted above. Due to the strategy chosen by Company Beta, its costs are higher than intended, and consequently, the company does not have a very high margin for the hypothesis of an increase in costs, proving to be sensitive to this increase. It is possible to see that a strategy focused on reducing COGS through the choice of suppliers from the African continent could represent a very positive change for the company's NPV.

		Maintenance Price					
LPS Sale and Installation Price for B2B Clients	€ 2 413,77	2500	3000	**3500**	4000	4500
	11000	€ (146 197,76)	€ (109 044,88)	€ (71 891,99)	€ (34 739,11)	€ 2 413,77
	13000	€ (109 044,88)	€ (71 891,99)	€ (34 739,11)	€ 2 413,77	€ 39 566,65
	15000	€ (71 891,99)	€ (34 739,11)	**€ 2 413,77**	€ 39 566,65	€ 76 719,53
	17000	€ (34 739,11)	€ 2 413,77	€ 39 566,65	€ 76 719,53	€ 113 872,42
	19000	€ 2 413,77	€ 39 566,65	€ 76 719,53	€ 113 872,42	€ 151 025,30

LPS Sale and Installation Price for B2C Clients	Maintenance Price					
€ 2 413,77	600	800	**1000**	1200	1400
5500	€ (21 110,31)	€ (15 882,74)	€ (10 655,16)	€ (5 427,59)	€ (200,02)
6500	€ (14 575,84)	€ (9 348,27)	€ (4 120,70)	€ 1 106,88	€ 6 334,45
7500	€ (8 041,38)	€ (2 813,80)	**€ 2 413,77**	€ 7 641,34	€ 12 868,92
8500	€ (1 506,91)	€ 3 720,66	€ 8 948,24	€ 14 175,81	€ 19 403,38
9500	€ 5 027,56	€ 10 255,13	€ 15 482,70	€ 20 710,28	€ 25 937,85

Cost of Installed Material for B2B Clients	Cost of Maintenance Material				
€ 2 413,77	250	300	**350**	400	450
4000	€ 40 491,90	€ 35 052,16	€ 29 612,43	€ 24 172,70	€ 18 732,97
4500	€ 26 892,57	€ 21 452,83	€ 16 013,10	€ 10 573,37	€ 5 133,64
5000	€ 13 293,23	€ 7 853,50	**€ 2 413,77**	€ (3 025,96)	€ (8 465,69)
5500	€ (306,10)	€ (5 745,83)	€ (11 185,56)	€ (16 625,29)	€ (22 065,02)
6000	€ (13 905,43)	€ (19 345,16)	€ (24 784,89)	€ (30 224,62)	€ (35 664,35)

Cost of Installed Material for B2C Clients	Cost of Maintenance Material				
€ 2 413,77	125	150	**175**	200	225
1500	€ 13 894,68	€ 12 937,94	€ 11 981,20	€ 11 024,46	€ 10 067,71
2000	€ 9 110,97	€ 8 154,23	€ 7 197,48	€ 6 240,74	€ 5 284,00
2500	€ 4 327,26	€ 3 370,51	**€ 2 413,77**	€ 1 457,03	€ 500,29
3000	€ (456,46)	€ (1 413,20)	€ (2 369,94)	€ (3 326,69)	€ (4 283,43)
3500	€ (5 240,17)	€ (6 196,91)	€ (7 153,66)	€ (8 110,40)	€ (9 067,14)

Transportation Costs	€ 2 413,77
9%	11 427,52
12%	6 920,64
15%	**2 413,77**
18,0%	(2 093,10) €
21%	(6 599,98) €

Tables 12 to 16: *Sensitivity Analysis using the presented variables and its influence.*

Scenario Analysis

Finally, after the change in individual variables, possible scenarios, with multiple variables being changed, and their effect on the NPV, were analyzed. This scenario analysis was conducted to understand the possible impacts caused by future events that could affect the economy of Rwanda and consequently the performance of Beta's internationalization.

In Table 20, it is possible to analyze the behavior of the NPV indicator according to changes in some inputs such as CAGR, number of potential clients, LPS sale value and installation, value of annual maintenance, costs of installed material and maintenance, transportation costs warehouse rent and number of employees, due to unexpected events. The main objective was to understand and analyze the results in the possibility of more extreme scenarios. We opted for an expansion scenario, where the economy sees a growth period, and at the opposite spectrum, a recession scenario, where Rwanda's economy contracts. Analyzing the results, it is possible to see that in a recession scenario, Company Beta presents a negative NPV, which reveals that the internationalization project won't be profitable, with the anticipated costs exceeding the projected earnings, and that the project will no longer be viable. Considering the dangerous situation that is operating under a recession, the company's directors must ensure through

agreements that the costs of materials, transport, or rent remain constant during the economic downturn, to prevent negative results or even the closure of the company due to losses.

Variable cells	Expansion Scenario	Normal Scenario	Recession Scenario
CAGR	8%	6%	5%
Number of potential B2C clients	12	10	8
Number of potential B2B clients	35	28	21
LPS Sale Value and Installation B2C clients	€ 8 500,00	€ 7 500,00	€ 6 500,00
LPS Sale Value and Installation B2B clients	€ 17 000,00	€ 15 000,00	€ 13 000,00
Annual Maintenance B2C clients	€ 1 200,00	€ 1 000,00	€ 800,00
Annual Maintenance B2B clients	€ 4 000,00	€ 3 500,00	€ 3 000,00
Cost of Installed Material B2C clients	€ 2 000,00	€ 2 500,00	€ 3 000,00
Cost of Installed Material B2B clients	€ 4 500,00	€ 5 000,00	€ 5 500,00
Cost of Maintenance Material B2C clients	€ 150,00	€ 175,00	€ 200,00
Cost of Maintenance Material B2B clients	€ 750,00	€ 350,00	€ 1 250,00
Tranportation Costs	12%	15%	18%
Warehouse Rent per Sqm per month	€ 7,00	€ 7,50	€ 8,50
Number of employees needed 2024	3	3	2
Number of employees needed 2025	4	3	2
Number of employees needed 2026	5	4	3
Number of employees needed 2027	6	5	3
Number of employees needed 2028	7	6	4
NPV	€ 250 957,33	€ 2 413,77	-€ 176 980,42

Table 17: *Scenario Analysis Results*

10. Overall Conclusions and Recommendations

From the study conducted it was possible to conclude that Beta is capable of pursuing the desired internationalization process as it holds paramount assets, such as its previous international experience in […], know-how, and market knowledge about African markets, to acquire a competitive advantage. Still, Beta faces a Portuguese LPI too niched for the company to enhance its positioning within such strong competitive forces, creating the need to move overseas as a way to guarantee the future growth. Furthermore, Rwanda emerged as the most attractive solution to move Beta from its current stagnant Portuguese reality, after implementing the aforementioned ranking and clustering analysis. However, it demands Beta to establish a strategic alliance with a local company to guarantee its successful entry into the new foreign market, as this country is renowned by its conducive business environment, possibly attracting big international players within the LPI.

Moreover, Beta's micro size and resource constraints demands the implementation of a narrow targeting strategy upon entry in Rwanda, resulting in the shift of efforts to acquire a considerable stance in the construction and energy industries, as the biggest potential revenue generator for Beta is exhibited by these sectors' infrastructures. Yet, in the future, Beta aims to attain a bigger market share by fulfilling the demand of other highly attractive industries such

as mining and government-owned infrastructures. Additionally, it is keen on starting to adopt an exportation approach from Rwanda to neighbor communities, as a way to leverage on the market potential created by its centralized African location. Regarding financials and according to the estimates made, the internationalization process will be financially viable, presenting positive operational and investment cash flows since year 1, with an NPV worth €2 414.

For future recommendations, Beta should focus on improving the financial performance of the activity in the Rwandan and Portuguese markets through close monitorization of its financial statements, and by implementing, whenever possible, financial ratio comparisons with other key industry players, as it will enhance Beta's areas in need of improvement. Also, investing in Rwandan market research will be crucial, since one of the difficulties encountered was the lack of data, making it difficult to access the market's sales potential and competitive landscape, increasing its fear of high resource commitment as the future becomes more uncertain. Additionally, it is vital for Beta to progressively investment in its Human Capital to boost its R&D development, since this investment can provide the company with reductions in production costs, helping the company to establish a better cost structure and facilitating its resource allocation upon its entry in Rwanda. Besides this, Beta holds the ability to become more renowned within the lightning protection industry if it takes the most out of this international expansion.

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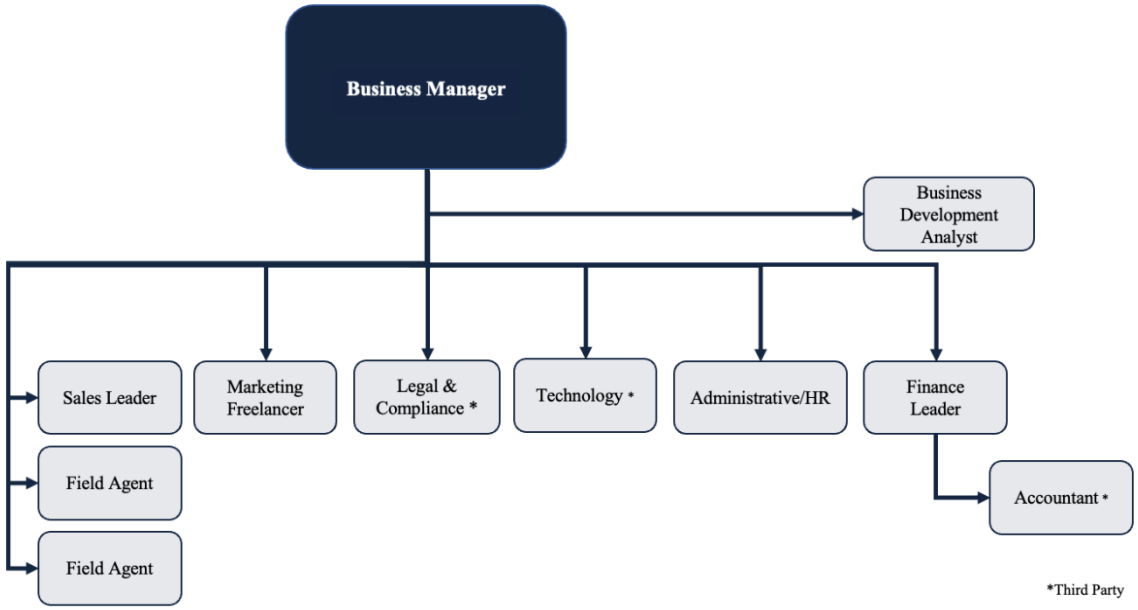
12. Appendices

Appendix 1: Organizational Chart provided by Company Beta, September 2023



Appendix 2: Company Beta's Global Readiness Score Assessment Table

	0	1	2	3	4	5
Is the foreign market similar to the domestic market?				x		
Is the End User of the product in the foreign market the same as in the domestic market?						x
Is the product successful in the domestic market?			x			
Is the product unique?		x				
Does the product perform the same function in the foreign market as it does in the domestic market?						x
Are the product use conditions the same in the foreign market as they are in the domestic market?						x
Does the product need modifications to meet the needs of the customers in the foreign market?				x		
What is the stage of the product's life cycle in the home market?						x
What is the stage of the product's life cycle in the international market?						x
Does the product require after-sales service?						x
Is the company in a position to provide after sales-service to its customers in the foreign market?		x				
Would export orders hurt domestic sales?				x		
Does the company have the financial resources necessary for export?		x				
Does the company have in-house personnel with export related knowledge/experience?				x		
Is international/global participation part of the Mission Statement of your company?	x					
Is international expansion a part of the strategic business plan of the company?				x		
Would the company be willing to investigate export market opportunities?		x				
Would the company be willing to attend and/or participate in Trade Shows abroad?	x					
Is the company willing to translate company literature into one or more foreign languages?					x	
Are the company's top competitors involved internationally?		x				
Is the industry highly regulated?		x				
Is the company certified- ISO 9000 or other certification?				x		

Appendix 3: African countries removed from analysis and respective reasoning for exclusion

Country	Reason to exclusion
Algeria	Low lightning density: 0,9 events/km^2/year
Cabo Verde	Low population: 593 149 inhabitants
Comoros	Low population: 836 774 inhabitants
Djibouti	Low population: 1 120 849 inhabitants
Egypt	Low lightning density: 0,1 events/km^2/year
Eritrea	Lack of information: GDP per capita's, GDP growth's most recent data from 2011; no information for Construction as a percentage of GDP, Cost to import, border compliance, Human Capital Index
Kenya	Low lightning density: 2,9 events/km^2/year
Libya	Low lightning density: 0,2 events/km^2/year
Mauritania	Low lightning density: 2,1 events/km^2/year
Mauritius	Low lightning density: 3,0 events/km^2/year
Morocco	Low lightning density: 1,2 events/km^2/year
Niger	Low lightning density: 4,2 events/km^2/year
Sao Tome and Principe	Low population: 227 380 inhabitants
Seychelles	Low population: 100 060 inhabitants
Somalia	Low lightning density: 2,2 events/km^2/year
Tunisia	Low lightning density: 3,0 events/km^2/year

Appendix 4: Country Ranking Macro indicators' weight and rationale.

Country Ranking		
Macro-Indicators	Weighting	Explanation
GDP Growth	3,5%	Stands as a crucial indicator within the market size group, reflecting the economic trajectory of a country. A high GDP growth rate in a market presents expansive opportunities for Company Beta's business expansion, particularly as a growing economy demands more infrastructure it will be beneficial for an engineering-focused company like Company Beta (Bankinter 2016)
Mandatory regulations for lightning protection	3,5%	A binary variable where each country was classified as having specific regulations for LPS or not. Since in countries where there is an obligation and regulation for the installation of this type of lightning protection systems, the demand for the products offered by Company Beta will be higher. Obligation and regulation can also act not only as a shield against companies that opt for very low-cost market strategies and who consequently choose not to comply with them but also because they can allow for a more fluid transition to the developing market.
Market receptivity to foreign companies	3,5%	This indicator was considered relevant as customers of the Company Beta's new share market must be open and willing to consider its products and services as a viable consumption option. It is necessary to understand consumer preference patterns, their openness to installation methods, and product types that may be different so that there is security in the internationalization process. It is important to reinforce that a market may look attractive from the outside but may pose significant challenges for a foreign company to be successful
Logistics Performance Index	3,5%	Is considered one of the essential factors to guarantee the success of a company and possible internationalization. Nowadays, businesses, suppliers, manufacturers, and consumers are connected to each other. It is completely essential that there is a solid basis regarding logistics performance, to guarantee the efficiency of operations, reduce waste, maximize profitability, reduce risks, ensure that the company can keep up with its competitors, and guarantee maximum customer satisfaction.
Human Capital Index	3%	A substantial Human Capital Index measures the level of human capital available considering the risks of poor health and education in the country analyzed (The World Bank, 2020), which is relevant since human capital is a critical component to achieve long-term competitive advantages, create value within the company and stimulate innovation (Mariz-Pérez et al., 2012). But, when choosing the country to go the importance given is relatively low for Company Beta, due to its limited resources and the possibility of partnerships establishment with other companies in the chosen country
Business Risk Rating Business Environment	3%	The indicator holds paramount significance for a company's internationalization, offering critical insights into the potential challenges and risks a company might encounter when expanding into new markets. Enabling companies to assess the stability, economic conditions, and institutional frameworks of potential markets, guiding them in selecting countries with favorable business environments conducive to sustainable growth and mitigating risks associated with default and operational challenges (Credendo 2023).
Country Risk Index	3%	Country risk indicator focuses on transfer and convertibility risks, including force majeure events like war or political upheavals. Crucially, helping companies assess potential risks associated with currency conversion, funds transfer, and unforeseen events in specific countries. Country risk macro indicators aids in strategic decision-making, enabling companies to navigate international markets by evaluating risks tied to government policies, geopolitical stability, and extraordinary events that may impact business operations (OECD n.d.).
Political Stability Index	3%	Political Stability Macroindicator categorizes countries based on the intensity of risks like war, natural disasters, and political unrest. These macro-indicators use short-term and medium/long-term assessments, examining liquidity, solvency, economic performance, and political stability. These evaluations provide insights into the potential risks tied to cross-border transactions over varying timeframes. Understanding these values aids businesses in assessing the stability, payment capacity, and risks associated with political and force majeure events, guiding strategic decisions and risk management while expanding internationally (Credendo 2023).
Countries in Africa with the most outgoing remittances	3%	Since the owner already lost money with his Angolan enterprise by being unable to move money from the company to other country, and by not forecasting the possible losses due to economic and political moves within the country
Population size	2,50%	A country's population was an important macro-indicator to consider not only because the company is looking to get scale in the new country, and a higher population number increases the number of potential customers, but also because generally, on the development path, countries which tend to grow the most are the ones with a decently sized labour force (David E. Bloom and Richard B. Freeman, 1986)
GDP per capita	2,50%	The GDP per capita which was also considered important, can be considered as a proxy of development, indicating roughly how much an individual contributes to the economy, but also offers a more short-term view into a country, as it does not measure its evolution, just its current state in time (OECD, 2008). GDP was not considered for the final ranking analysis given that it can be derived from the two previous variables, and it would, therefore, not improve the country analysis.
Number of individuals using the internet	2,50%	Allows for a better coordination of a company's operations from its home base, as well as provides a faster mean of increasing brand awareness. Additionally, the company beta could focus on implementing e-commerce strategies to achieve customer segmentation, pricing pressure, social commerce, personalization, and sustainable and ethical shopping, some trends that could be on the rise in the coming years (Kirk W. McLaren, 2023). However, despite this indicator presenting very appealing perspectives, the African market ends up being quite limiting, as the number of individuals with internet access is quite low when compared to other countries around the world.
Currency Exchange	2,50%	It affects the value of exports and imports (Smith, 2022) – they affect the cost of goods acquired from another nation, and they alter the desirability of their products to foreign clients (HBS, 2022) – which, will create, once again, profitability movements in Company Beta, a company with a business model connected to a various number of suppliers outside of Africa
Population growth	2%	Most of the analyzed countries exhibit similar patterns, with the starting point, that is the overall population, being the greater differentiator
Political Freedom Index	2%	Political Freedom Indicator evaluates essential aspects like governance, civil liberties, and individual rights across nations. For companies, this indicator holds significance as it offers insights into a country's political stability, level of governmental transparency, and respect for human rights. This evaluations aids businesses in assessing the socio-political landscape, potential risks tied to governance. It guides companies in making informed decisions regarding international expansion, ensuring alignment with values and minimizing potential risks associated with political instability or rights violations (Freedom House 2022).
Government incentives for new businesses	1%	A macro-indicator that may help the foreign company to establish itself and which can be very relevant to consider when it comes time to decide the most suitable country for internationalization. The possibility of extra support allows for greater investment in R&D, hiring support, the creation of new jobs, and investment in company facilities (Brian Smith, 2021). Considering specifically the African continent, each country offers different opportunities and presents a very different business environment. However, when companies start looking for support and support for the development of business activities, it is very difficult to find. The support offered by African governments mostly requires pre-approval which can up to 12 months, furthermore, cash subsidies are not available, and the existent incentives will be subject to very specific rules and will only be granted under all applicable conditions (Brian Smith, 2021). Furthermore, the incentives offered by African governments only allow companies to benefit from one unique support for each project, which means that companies have to decide which incentive is most advantageous and give up some that could also mean great support. Therefore, despite being an indicator with a lot of potential, the African market still cannot keep up with other governments in the world in this regard and that is why it has been decided to only assign a weight of 1% to this macro-indicator
Purchasing power of consumers	1%	Carries a weight of 1% and contributes to the improvement of Company Beta's B2C sector. This insignificant weight is justified by the fact that the B2B sector is the most relevant however, the company still sells products and services to some end consumers.
Type of Main Industry	0,50%	Scoring the lowest weight importance from the all-macro indicators, appears as a recommendation given from CB's owner, but since most of African Countries present a stronger position in the tertiary industry, which is a positive factor since it shows vitality from the African markets because significantly contributes to the economy, accounting for a significant share of GDP and employment (Team, 2023).

Appendix 5: Correlation of the Clustering Macro Indicators Index

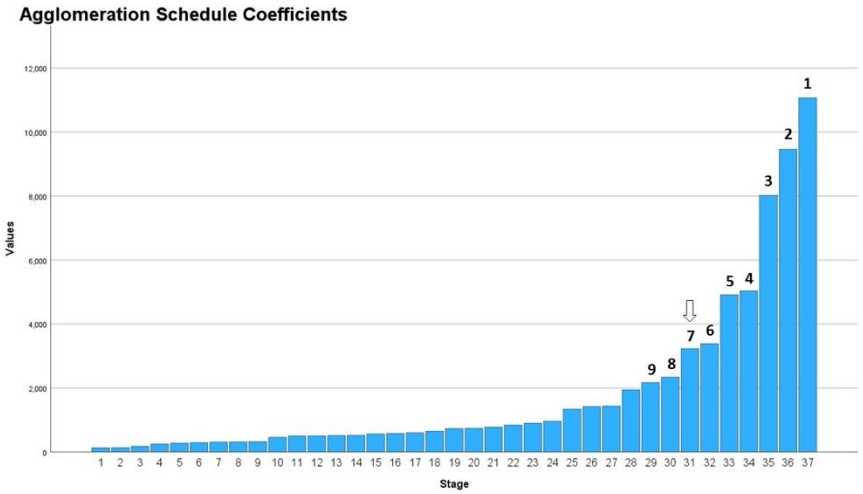
Correlation between selected indicators		
GDP growth	Ease of Doing Business	0,405432
GDP growth	Construction Industry	0,031162
GDP growth	Lightning Density	0,02637
GDP growth	Projected inflation	0,162435
Ease of Doing Business	Construction Industry	0,246119
Ease of Doing Business	Lightning Density	-0,46732
Ease of Doing Business	Projected inflation	0,015656
Construction Industry	Lightning Density	-0,305
Construction Industry	Projected inflation	-0,0133
Lightning Density	Projected inflation	0,179043

Appendix 6: Agglomeration Schedule for Cut-off distance

Agglomeration Schedule

	Cluster Combined			Stage Cluster First Appears		
Stage	Cluster 1	Cluster 2	Coefficients	Cluster 1	Cluster 2	Next Stage
1	25	34	130.153	0	0	22
2	19	21	136.593	0	0	5
3	16	24	177.180	0	0	9
4	1	22	253.505	0	0	16
5	6	19	278.066	0	2	11
6	36	37	291.213	0	0	26
7	23	27	307.046	0	0	23
8	11	26	313.070	0	0	12
9	14	16	324.714	0	3	10
10	5	14	453.442	0	9	27
11	6	30	503.870	5	0	19
12	3	11	505.302	0	8	20
13	4	20	514.147	0	0	21
14	13	35	518.092	0	0	24
15	7	10	560.195	0	0	31
16	1	18	576.118	4	0	29
17	12	15	601.442	0	0	19
18	2	29	653.412	0	0	21
19	6	12	733.014	11	17	25
20	3	31	741.256	12	0	23
21	2	4	778.316	18	13	24
22	17	25	842.143	0	1	26
23	3	23	900.436	20	7	27
24	2	13	966.375	21	14	28
25	6	8	1343.265	19	0	28
26	17	36	1413.636	22	6	29
27	3	5	1433.499	23	10	30
28	2	6	1948.301	24	25	30
29	1	17	2171.756	16	26	33
30	2	3	2338.591	28	27	32
31	7	9	3230.006	15	0	35
32	2	33	3389.765	30	0	34
33	1	28	4909.539	29	0	34
34	1	2	5039.570	33	32	35
35	1	7	8024.821	34	31	36
36	1	32	9460.550	35	0	37
37	1	38	11068.843	36	0	0

Appendix 7: Agglomeration Schedule Coefficients



Appendix 8: Gas stations' Segment Size

Gas Stations' Segment Size	
Petrol Company	**Number of Gas Stations**
Engen	44
SP	63
Merez	20
Lake	10
Rubis	40
Kobil Rwnda	61
Mount Meru	23
Hass Petroleum	7
Total Energies ≈	54
Sum	322

Appendix 9: Segments' Attractiveness for Marketing Targeting.

	B2B				B2C
	MINES	**CONSTRUCTION INDUSTRIES**	**GAS STATIONS**	**GOVERNMENT OWNED BUILDINGS**	**RESIDENTIAL BUILDINGS**
Size	369 mine sites	1.000 dwelling units per year	≈322 Gas Stations + 79 Power Generation Plants	7539	211.458
Growth	13% annual	5 % annual	≈215% more in 10 years	6% annual	5% annual
Competitors	Construction and Electrical companies	Electrical companies	Construction and Electrical companies		
Accessibility	Sector fairs, Trade missions and WOM			Public Tenders	
Differentiation	Compliance with regulations and safety measures, two annual revisions		Previous experience working with the segment	Previous experience working for the Public Administration in Angola	Predesigned small standard system
Profitability	Medium	Medium-High	High	High*	Low

Appendix 10: Market Potential and Total Number of Clients Considered Estimation

	Market Potential Clients	Reachable percentage of buildings	Market Share	Total Number of Clients Considered
Residential Buildings	1000	40%	2,50%	10
Total B2C	**1000**			**10**
Corporate Buildings	163	100%	15%	24
Gas Stations	322	100%	1%	3
Generation Plants	79	100%	1%	0,79
Total B2B	**564**			**28**

Appendix 11: Revenue and Cost Drivers

	2024	2025	2026	2027	2028
Revenue Drivers					
Number of potential B2C clients	10	10	10	10	10
Number of potential B2B clients	28	28	28	28	28
Number of LPS for B2C clients maintained	8	8	9	10	10
Number of LPS for B2C clients installed	2	2	2	2	3
Number of LPS for B2B clients maintained	23	24	26	27	29
Number of LPS for B2B clients installed	6	6	6	7	7
LPS Sale Value and Installation for B2C clients	€ 7 500,00	€ 7 500,00	€ 7 500,00	€ 7 500,00	€ 7 500,00
Annual Maintenance for B2C clients	€ 1 000,00	€ 1 000,00	€ 1 000,00	€ 1 000,00	€ 1 000,00
LPS Sale Value and Installation for B2B clients	€ 15 000,00	€ 15 000,00	€ 15 000,00	€ 15 000,00	€ 15 000,00
Annual Maintenance for B2B clients	€ 3 500,00	€ 3 500,00	€ 3 500,00	€ 3 500,00	€ 3 500,00

	2024	2025	2026	2027	2028
Cost of Goods Sold Drivers					
Cost of Installed Material for B2C clients	€ 2 500,00	€ 2 500,00	€ 2 500,00	€ 2 500,00	€ 2 500,00
Cost of Maintenance Material for B2C clients	€ 175,00	€ 175,00	€ 175,00	€ 175,00	€ 175,00
Cost of Installed Material for B2B clients	€ 5 000,00	€ 5 000,00	€ 5 000,00	€ 5 000,00	€ 5 000,00
Cost of Maintenance Material for B2B clients	€ 350,00	€ 350,00	€ 350,00	€ 350,00	€ 350,00
Tranportation Costs (% of Cost of Material)	15%	15%	15%	15%	15%
Tariffs on Material (% of Cost Of Materials)	21,25%	21,25%	21,25%	21,25%	21,25%

	2024	2025	2026	2027	2028
Selling and Administrative Cost Drivers					
Warehouse rent per sqm per month	€ 7,50	€ 7,50	€ 7,50	€ 7,50	€ 7,50
Electricity usage per year in hours	17000	17000	17000	17000	17000
Electricity rate per KW/h	€ 0,20	€ 0,20	€ 0,20	€ 0,20	€ 0,20
Number of office equipment lease months	12	12	12	12	12
Office equipment lease rent per month	€ 94,83	€ 94,83	€ 94,83	€ 94,83	€ 94,83
Accounting costs per year (outsourced)	€ 1 700,00	€ 1 700,00	€ 1 700,00	€ 1 700,00	€ 1 700,00
Marketing costs per month (outsourced)	€ 200,00	€ 200,00	€ 200,00	€ 200,00	€ 200,00
Marketing Costs (fairs)	€ 3 000,00	€ 3 000,00	€ 350,00	€ 350,00	€ 350,00
Marketing Costs (trade missions)	€ 1 500,00	€ 1 500,00	€ -	€ -	€ -
Marketing Costs (days for hosted conferences)	2	2	1	1	1
Marketing Costs (conference room rent)	€ 567,00	€ 567,00	€ 567,00	€ 567,00	€ 567,00

	2024	2025	2026	2027	2028
Personnel Cost Drivers					
Type I Number of employees needed	3	3	4	5	6
Type II Number of employees needed	1	1	1	1	1
Type III Number of employees needed	1	1	1	1	1
Number of months of salary to be paid	13	13	13	13	13
Type I salary	€ 425,00	€ 425,00	€ 450,00	€ 450,00	€ 475,00
Type II Salary	€ 1 250,00	€ 1 250,00	€ 1 250,00	€ 1 250,00	€ 1 250,00
Type III Salary	€ 3 000,00	€ 3 000,00	€ 3 000,00	€ 3 000,00	€ 3 000,00
Employer costs with Social Security	12,80%	12,80%	12,80%	12,80%	12,80%

Appendix 12: Market Sales Potential Estimation

B2C	
Population	2.588.000
Percentage of People in Slums	40%
Household average people	3,3
Number of Households not Slums	470.545
Percentage of Households needing LPS	5,0%
Household needing LPS	23.527
Average cost LPS installation	7.500
Average cost LPS revision	1.000
Market Sales Potential	99.990.909
Company Sales Potential %	0,1%
Company Sales Potential B2C	99.991

B2B	
Number of Companies	24.515
Percentage of Companies needing LPS	30%
Number of Companies needing LPS	7.355
Number of Gas Stations	153
Average cost LPS installation	15.000
Average cost LPS annual revision	3.500
Market Sales potential	68.029.125
Company Sales Potential %	0,7%
Company Sales Potential B2B	476.204
Total B2B & B2C Market Potential	**168.020.034**
Total B2B & B2C Company Potential	**576.195**

Asummptions	
Percentage needing LPS Installation	50%
Percentage needing LPS Revision	50%