



Internship Report

Master in International Business

***The internationalization of CK Solar Academy to
Brazil***

Juliana Filipa Pereira Mendes

Leiria, March 2017

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Juliana Filipa Pereira Mendes

Report developed under the supervision of Professor Ana Lúcia Marto Sargento, professor at the School of Technology and Management of the Polytechnic Institute of Leiria.

Leiria, March 2017

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Dedication

To my parents. Because, they always believe in me, even when I don't.

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Acknowledgements

I want to thank my parents, not only for all the patience they have with me, but also for investing in my education and believe that I succeed. I want to thank my sister Catarina and my boyfriend Nuno for always supporting me and giving me strength to continue with my work. I want to thank Professor Ana Sargento, for all the support she gave to me during my master's degree and my internship in the company. Also, I want to thank Eng. Hugo Barbosa for the opportunity of working in CRITICAL KINETICS, and to my colleagues in CRITICAL KINETICS, Rui Santos, Fábio Moreira, Edgar Vieira, Sérgio Godinho, Ana Oliveira, Sofia Oliveira, Filipe Braz, Beatriz Lopes, and Paula Marques for helping me feeling integrated in the workplace.

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Resumo

Nos dias que correm, existe uma maior tendência para a internacionalização das empresas. Esta necessidade prende-se não só com a acentuação da concorrência nos mercados nacionais, mas também com a vontade de fornecer ao mercado externo serviços que, até ao momento, este não possuía. É deste último tópico que nasceu a vontade de internacionalização da CK Solar Academy para o Brasil, mais propriamente para S. Paulo.

Deste modo, o presente relatório descreve as atividades desenvolvidas durante o período de estágio curricular na empresa CRITICAL KINETICS, Unip. Lda., situada em Torres Novas. Esta empresa opera no mercado das energias renováveis, mais propriamente no fornecimento e instalação de equipamento fotovoltaico, direcionado para o autoconsumo. A empresa dispõe de várias secções, sendo cada uma responsável por uma vertente do mercado das energias renováveis. A secção em estudo neste relatório, a CK Solar Academy, é responsável pela formação de profissionais capazes de proceder à instalação do equipamento específico deste mercado. Esta secção da empresa dispõe de uma oferta variada de cursos na área do fotovoltaico lecionados por todo o país.

O trabalho aqui desenvolvido pretendia especificamente aumentar o número de mercados em que a empresa opera, procurando mercados que carecem de ofertas formativas tão amplas e completas como as oferecidas pela CK Solar Academy. Assim, e tendo em consideração a necessidade expressa pela empresa de procurar um único mercado de língua portuguesa, para implementar o processo de internacionalização, foi avaliada a possibilidade de internacionalização para o mercado brasileiro, mais propriamente para S. Paulo, a cidade com mais habitantes no Brasil.

Para concretizar o objetivo apresentado anteriormente, foi aplicado um estudo de caso, centrado da CRITICAL KINETICS, Unip., Lda. A pesquisa baseou-se numa análise aprofundada do ambiente externo e das características internas da empresa, para a qual foram cruzados dados secundários quantitativos e qualitativos.

Do trabalho efetuado resultou a elaboração do plano de internacionalização para o ano 2017 ou 2018, cujo objetivo principal é a entrada no mercado brasileiro, para a cidade de S. Paulo no Brasil, promovendo a oferta de cursos e formando profissionais reconhecidos pelo mercado. Revelou-se claro que a empresa deve procurar, numa fase inicial, apostar em mercados de língua portuguesa, uma vez que falha na capacidade de lecionar os cursos numa

outra língua, e apostar em mercados cujos consumidores procurem reconhecimento das suas capacidades a nível nacional e internacional.

Até ao momento, o processo de internacionalização ainda não foi encetado pela empresa, sendo que as recomendações presentes na estratégia de internacionalização elaborada no contexto deste trabalho serão tidas em consideração aquando o início do mesmo. As recomendações presentes vão ao encontro da Teoria das Redes, que defende a criação de laços entre o empreendedor e o mercado, que irão favorecer a presença da empresa no mercado anfitrião e permitir a criação de pontes entre o mesmo e o país de origem da empresa. Esta teoria vai orientar a empresa para a criação de uma *Joint Venture* com um possível parceiro do mercado brasileiro, criando desta forma pontes entre os dois países, favorecendo a empresa no mercado brasileiro e facilitando a entrada do parceiro no mercado português e posteriormente no mercado europeu.

Embora se trate de um estudo de caso, estando deste modo ajustado ao caso concreto da CRITICAL KINETICS, Unip., Lda., e impedindo a generalização de conclusões, admitimos que o presente trabalho, quer pela metodologia adotada na formulação estratégica, quer pelos outputs e conclusões obtidas, poderá ser útil a outras empresas similares e em processo de internacionalização.

Palavras-chave: Internacionalização; Brasil; Portugal; Estratégias de Internacionalização; Diferenças Culturais.

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Abstract

Nowadays, more firms tend to explore the off-borders market to fight the stress of the competition in the national market. Moreover, most of the firms see this chance as an opportunity to provide the foreign market what it lacks. In such context, this report examines the possibility of the internationalization of CK Solar Academy to Brazil, more specifically to the city of *S. Paulo*.

The present work describes the activities developed during the curricular internship in CRITICAL KINETICS, Unip. Lda., located in Torres Novas. This company works in the renewable energies' market, more specifically in the supply and installation of photovoltaic equipment, directed for own-consumption. The company has several sections, each being responsible for a renewable energies' market branch. The section studied in this report is responsible for training professionals to be able to install and work with this specific equipment. This section of the company has a varied range of courses in the photovoltaic area taught throughout the Portuguese country.

The developed work intended to increase the number of markets in which the company operates, aiming for markets that lack in training courses as wide and complete as those offered by CK Solar Academy. Therefore, and taking into consideration the expressed need of the company to search for one Portuguese-speaking market to implement the internationalization process, the possibility of internationalization to the Brazilian market was evaluated, more specifically to the city of *S. Paulo*, the one with more inhabitants in the whole country.

To achieve the presented objective, a case-study was applied, focusing on CRITICAL KINETICS, Unip. Lda. The research was based on a deep analysis of the external environment and the internal characteristics of the company, in which secondary quantitative and qualitative data were crossed.

The previous work, resulted in the internationalization plan to the year of 2017 or 2018, which main objective is entering in the Brazilian market, to the city of *S. Paulo*, promoting the wide range of courses and training professionals acknowledge by the market. It was proven that the company should, in an initial phase, take its chances in Portuguese-speaking markets, once it has not the necessary knowledge to teach the courses in another

language, and also to look for markets in which the consumers are looking for recognition of their skills nationally and internationally.

Until now, the internationalization process of the firm has not yet started. Thus, the considerations and recommendations presented in the internationalization strategy in this report will be taken into consideration at the time of the company begins its implementation. The recommendations presented meet the Network Theory, which argues for the creation of a relationship between the entrepreneur and the host market that will favor not only the presence of the company in the host market but also allow the creation of bridges between it and the home country of the company. This theory will guide the company to the creation of a Joint Venture with a possible partner in the Brazilian market, creating bridges between the two countries, bringing benefits to the Portuguese company in the Brazilian market, and smoothing the entering of the Brazilian company in the Portuguese market, and therefore the European market.

Although being a case-study, and being adjusted to the specific case of CRITICAL KINETICS, Unip., Lda., thus preventing the generalization of conclusions, we admit that the present work, can be useful to other similar companies in the process of internationalizing, not only by the adopted methodology in the strategic formulation, but also for the outputs and obtained conclusions.

Keywords: Internationalization; Brazil; Portugal; Internationalization Strategies; Cultural Differences.

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1. Chapter I - Introduction

Nowadays the process of going international has become already a natural step in the lifecycle of a company. Internationalization is, by Kafouros, Buckley, Sharp, & Wang, (2008), the expansion across country-borders into geographic locations that are new to the firm. These new locations can sometimes mean new cultures and new ways of working that might be completely unknown for the company. Thus, a firm must not expand its borders to new markets without having some knowledge on what can be expected from them. It is from the necessity to avoid the unknown and the risks brought by it that most companies opt for a deep investigation on the foreign market before they can decide whether it is viable or not to invest in it.

The present study was developed with the objective to provide CRITICAL KINETICS, Unip. Lda, the information needed to a safer and more stable internationalization to the Brazilian market. Based on the most recent literature on internationalization and its process and the different modes of entry, this study provides a defined strategy with the possible barriers and opportunities for the company.

This report was based on CK Solar Academy, which is the department of CRITICAL KINETICS, Unip. Lda, responsible for the formation and training of engineers to operate in the renewable energies market. The company differentiates itself from the competitors of the market because it provides complete and wide range of courses directed to the actual needs of the market. CRITICAL KINETICS – Energy Consultants is an enterprise in the Photovoltaic area, created in May of 2011 by the single-founder Hugo Ricardo Barbosa Maganão (who owns 100% of the company's capital), with the main objective of operating in the renewable energies market. The enterprise operates mainly in Portugal but has also some partners in Mozambique, Angola and Brazil, in the following range of business areas: *SmartPV*; *AGRO-CK*; and *Mobilidade21*. CRITICAL KINETICS is a company strongly implemented in the Photovoltaic market, being widely recognized by the majority of market players as a serious and professional entity. At the moment, the company has offices in Lisbon (*Almada*), *Torres Novas*, *Montemor-o-Velho*, *Matosinhos* and *S. Brás de Alportel* and integrates two Engineers, three Trainee Engineers, three Renewable Energy Technicians, one designer and, three employees responsible for the development and commercialisation of CK.

The choice of internationalizing the company to Brazil, more specifically to S. Paulo, came with the fact that the Brazilian market was the market chosen by the company, mainly because of the similarities in language and culture, and the city of S. Paulo, was chosen for being the city with more inhabitants in the whole country.

This report is divided in six chapters. The first one is this one, the Introduction, where it was made a describing the objective, expected findings, the focus and the motivation of the study. The second one is the Literature Review. In that chapter relevant literature contributions will be reviewed, namely concerning the theories of internationalization, the motives and benefits of internationalization, obstacles and costs of internationalization, entry modes, and the importance of Hofstede's dimensions on the internationalization process. The third one is the Methodology, in which a brief description of the company is made, and sources consulted to develop the Case Study are described. The fourth chapter concerns the Case Study. In this chapter a more detailed description of the company is presented, namely its history, mission, vision and objectives, its organizational structure, and the business areas. The external analysis of the company is presented next, namely the market definition, where it is included a PEST analysis, Porter's Five Forces, and expected clients and competitors. After an internal analysis is made, followed by the SWOT analysis, the critical factors for success and the internationalization strategy. The fifth chapter is focused on the Internship, describing all the tasks developed in the nine months internship in Critical Kinetics. In the Conclusion, the results of the study are discussed, along with the limitations found and the prepositions of future research.

2. Chapter II – Literature Review

2.1. Internationalization

2.1.1. Definition of Internationalization

Several authors have already defined internationalization, and each of them has adopted a different way to define it. For instance, Hitt, Hoskisson, & Kim (1997) argue that internationalization refers to bringing new foreign operations within the boundaries of a firm rather than using arm's length market transactions, whereas Riahi-Belkaoui (1996) states that, internationalization increases the firm's capacity to exploit different opportunities in different markets and in different countries. All of these definitions conduct us to the fact that internationalization allows a firm to exploit inter-relationships between different segments, geographical areas or related industries which will create economies of scope, scale and experience (Riahi-Belkaoui 1996).

The internationalization process has three dimensions: pace, scope and, rhythm (Lin 2014). The first one, pace refers to the number of foreign expansions or the number of changes of a firm during a certain period of time or a certain degree of internationalization. A fast pace of internationalization will bring higher risks to the firm once it will have little time to evaluate the risks of all its internationalizations and apply them correctly, in order to succeed. The second one, scope, refers to the geographic extension of the expansion process of the firm. Chasing a higher scope will make the internationalization process of the firm more difficult, once it will take more time to learn the market habits and preferences. The third one, rhythm, is related to the regularity of the process at which new subsidiaries are established. A higher rhythm of expansion, will close the firm's habits to the new ones brought by the host country. Firms that follow a constant rhythmic pace are more able to benefit from foreign expansions. Having this dimensions and its meaning in consideration it is safe to defend that the process of internationalization of a company should be slow paced, have a small scope and a small rhythm in order to be successful. The basic mechanism of internationalization relates the market knowledge with the commitment decisions and the activities proposed with market commitment (Johanson & Vahlne, 1977). This means that,

the higher the market knowledge the higher the commitment in the decisions made, which, therefore will conduct to activities that will fit the market, increasing the level of the commitment towards it. This mechanism defends that, in matters of a slow internationalization, a smaller pace will give the firm the opportunity to evaluate the risks, a smaller scope the opportunity to know the market and a smaller rhythm to learn the habits of each market, leading the firm towards better decisions and then better results (Lin, 2014).

2.1.2. Internationalization Theories

Related to the internationalization process, it is possible to identify several theories. All these theories acknowledge firms' ability to transfer general knowledge from country to country in a diffusion process that facilitates lateral growth (Fletcher, Harris, & Richey Jr., 2013).

The **Resource-based View Theory** is based on Penrose's theory of growth and argues that a sustainable competitive advantage stems from a set of valuable assets owned by the firm (Su, 2013). This means that the firms' level of competition comes from the tangible and intangible assets that are in its possession and that are unique. These resources can be the management skills, the organizational processes and the information the firm controls (Zheng, Yang, & McLean, 2010). At the center of the Resource-based View stands the knowledge-based view that poses that the capability of the firm to create and use knowledge is the most important source of the firm's sustainable competitive advantage (Zheng, Yang, & McLean, 2010). All in all, the *Resource-based View Theory* is focused on the firm resources' level that provide it with a unique competitive posture (Griffith & Harvey, 2001). This unique and competitive posture can only be acquired through the gathering of resources that are valuable, rare, and imperfectly imitable and for which it cannot be found any strategically equivalent substitute. In this way it will create barriers that will halt the competition, allowing for the necessary competitive advantage. (Griffith & Harvey, 2001). According to the *Resource-Based View Theory* the market entry decisions are driven by firms' individual resources and capabilities (Su, 2013).

The **Eclectic Paradigm** or **OLI Framework** was developed by Dunning (1977, 1988, 1993, 2001) and suggests that the firms decide on their international business activities based on three types of advantages: **Ownership (O)**; **Location (L)**; and **Internalization (I)**. This theory has as its main objective explaining the foreign investment basing itself on the

three types of advantages mentioned above (Abrantes, 1999). The **Ownership advantage** comes from the fact that the company owns assets that are not accessible to the competitors for a period of time, like, for example, technological property, exclusive market access, etc. The **Location advantage** comes with the fact that the company is able to sell its products in another country, finding there more advantages than in its own market. Finally, the **Internalization advantage** comes from the capacity of the company to find specific advantages of its own, instead of giving them to other companies, through licensing, etc. According to Cantwell and Narula 2001, over the years the eclectic paradigm has been the most widely adopted framework, explaining the growth of multinational firms (Su, 2013).

The **Product Life-Cycle Theory** was developed by Vernon (1966) and consists in an “attempt to bridge a country-based perspective of international trade theory with an individual firm’s perspective of international investment theory” (Melin, 1992, pp. 102-103). Vernon identified several stages in the life-cycle of a product, that are going to influence the internationalization of the company and the product itself. The first stage is a domestic stage, where the product is oriented to the country where it was developed. The second stage is a stage of growth, that describes the beginning of the exportation activities, and its increasing, introducing also the foreign direct investments in the new market. The third stage is a maturity stage, which defines that, when the markets are saturated, the product sold is relocated to another country with low labor costs. The final stage is the decline stage, in which a company leaves the country where the innovation was developed because of the decline of the manufacture and the demand (Melin, 1992).

The **Internalization Theory** defends the company as an organized structure, born to integrate, under the same hierarchical principle, the transactions made by the market in an inefficient and expensive way (Abrantes, 1999). This theory explores the fact that a firm’s internationalization is a process of rational actions, where the firm keeps on developing its internal markets, until it reaches the expected equilibrium between the benefits and the costs (Su, 2013). Internalization is a specialized principle, which objective is to explain where the boundaries of the organization lie and how they can be shifted in response to certain changing circumstances. The boundaries are not only the geographical but also, for instance, the product range boundary, among others (Buckley & Casson, 2009). This theory allows the evaluation of the relative efficiency and the effectiveness of alternative mechanisms of governance to manage economic interdependencies (Rugman & Verbeke, 2008). Also, this theory remains a foundation of the field today. (Knight & Liesch, 2016)

The **Transaction-Costs Theory** states that the firms select governance structures based on the expected market transaction costs (Williamson 1975, 1985 as cited in Su 2013, p. 177). The transaction costs are the costs associated with the hiring of services and products in the market from the company. These costs are faced by the company when it decides to explore certain markets, even though the internationalization of the company is not an option. There are two types of costs: the ones associated with the search of information and the ones associated with the risks from the violation of the contract. Meaning this that, if the costs for certain activity are higher than the transaction costs, the company should decide not to go through that certain activity.

The **Traditional Internationalization Theory** is based on the idea of gradual internationalization, meaning this that there are several steps to complete before a firm can fully enter the international market. This theory is described as being sequential, where each firm goes through a certain number of steps increasing its commitment towards the international market (Johanson and Vahlne, 1977 as cited in Melin, 1992, p. 103). With this model, a firm will gradually deepen its commitment and invest in the foreign market as it gains more experience in the internationalization process (Tsai & Eisingerich, 2010). The traditional internationalization theory includes, among others, the Uppsala model and the Network theory, which will be discussed below.

The **Network Theory** focuses, as the name states, in the network of the entrepreneur in the market (Kunday & Sengüler, 2015). According to Johanson and Mattson (Kunday & Sengüler, 2015), by creating foreign networks in different countries, the firms will establish and improve their positions in those markets. The markets are taken as networks of relationships (Knight & Liesch, 2016), where the firm is at the center enabling and constraining relationships (Schweizer, Vahlne, & Johanson, 2010). These relationships consist in the firm giving some access to the resources provided by its network while its network has also the same access to the same resources, meaning this that “the firm and its partners are mutually dependent” (Schweizer, Vahlne, & Johanson, 2010, p. 345). Networks provide access to markets and to a wide range of information that was not possible to gather without the help of those included in this network. This information will be important, not only to the firm that is internationalizing but also to its partners in the internationalization process, once they too will have access to this information. This means that the network capabilities will “help reduce the risks of early internationalization” (Knight & Liesch, 2016, p. 97). The more knowledge the firms have about each other, the closer will their

relationships be, and the better the networking the higher benefits will be exchanged with the partners. Within this theory, internationalization is seen “as the result of opportunity-seeking efforts made by the focal firm in order to improve or defend its position in a network” (Schweizer, Vahlne, & Johanson, 2010, p. 346).

The **Uppsala Model** also known as the U-model, describes internationalization as a “learning by doing” process. Figueira-de-Lemos, Johanson, & Vahlne (2011, p. 143) argue that “internationalization cannot be seen as the result of an optimization exercise between resource allocation and foreign market exploitation”. They defend that the internationalization process has to be understood as it adjusts to changes within a firm and its environment. This model supports itself in the knowledge that the firm does not have the complete information on the market and so it must develop its activity in an unknown environment (Abrantes, 1999). This model divides the internationalization process in four steps: no regular export activities; export via independent representatives; sales subsidiary; and production/manufacturing. These four stages imply successively larger resource commitments and lead to quite different market experiences and information for the firm (Johanson & Wiedersheim-Paul, 1975). The first step defends that the firm is still getting to know the market. This means that, by not having any channel of information on the market, they have some irregular exportation activities, which imply that the firm is not committed to the market. When a firm arrives to the second step, it means that it has successfully developed a channel to the market, which gives it regular information on the sales and on its influencing factors. This step implies more commitment and knowledge on the market. The third step means that the firm has already the necessary information to invest directly in the market. This happens through a sales subsidiary and brings to the firm the opportunity to get direct experience of resource influencing factors. The last step, means an even larger resource commitment to the market. (Johanson & Wiedersheim-Paul, 1975)

The Uppsala Model is focused on market knowledge and market commitment (Melin, 1992) and stands that, when knowledge is increased, the risks and opportunities in a certain market are easily more observed (Kunday & Sengüler, 2015). Also, it defends that in stable environmental conditions it inspires a dynamic incremental between knowledge and commitment, but sometimes the environment becomes volatile and demands prompt and drastic decisions (Figueira-de-Lemos & Hadjikhani, 2014). This model is known for being too specific, having its significance limited to the early stages of internationalization,

meaning this that as the world becomes more homogeneous the explanatory value of psychic distance tends to decrease (Melin, 1992).

2.1.3. Motives and benefits to internationalize

According to Abrantes (1999, p. 2) the internationalization of a company was born with the stress of the competition over the political frontiers and with the growing international liberalization of the commercial and industrial activities. The internationalization process is seen by small firms as one strategic option to grow large and acquire resources and capabilities (Guillén & García-Canal, 2009 as cited in Tiwari, Sen, & Shaik, 2016, p. 355). One of the motives that drive the internationalization process are the opportunities existing in the market. Since the market is never in equilibrium, the firm might have an opportunity associated with its current business activities (Schweizer, Vahlne, & Johanson, 2010). It can be argued that the SMEs that are operating in foreign markets have a high growth of turnover, employment and innovation activities (EIM, 2010 as cited in Kubicková, Votoupalová, & Toullová 2014, p. 320). Also, by aiming to international markets, SMEs can obtain additional capacity, strengthen their financial position, achieve innovation and increase revenues, being this beneficial to its national economies (Kubicková, Votoupalová, & Toullová, 2014).

Research suggests that the motivations of internationalization can include the economies of scale and scope, the increasing market power, the knowledge gained enhancements that will lead to stronger capabilities and innovation, and exploiting entrepreneurial opportunities (Barkema & Vermeulen, 1998; Hitt, Hoskisson & Kim, 1997; Lu & Beamish, 2001; Vermeulen & Barkema, 2001 as cited in Hitt, Bierman, Uhlenbruck, & Shimizu, 2006, p. 1137).

2.1.4. Obstacles and Internationalization Costs

According to Figueira-de-Lemos, Johanson, & Vahlne (2011, p. 143) the main obstacle to international expansion is the lack of knowledge of foreign markets, which is justified by the fact that, when lacking knowledge on the markets, managers must make the decisions based on consciously incomplete information sets. This lack of knowledge on the market will directly affect the development of the necessary relationships for a firm to

succeed (Kubícková, Votoupalová, & Toulová, 2014). More than the lack of knowledge of the foreign market, the lack of resources, mostly financial, and a following need of rapid return on the investment represent another obstacle (Kubícková, Votoupalová, & Toulová, 2014).

Another obstacle to the firm's internationalization is the psychic distance. This distance is defined as "the sum of factors preventing the flow of information from and to the market" (Johanson & Vahlne 1977, p. 24). This psychic distance includes differences in the language, culture, business practices, education and industrial development (Johanson & Vahlne, 1977).

Additionally, Lu & Beamish (2004, p. 606) state that at high or low levels of internationalization, the extent of geographic diversification was negatively associated with the firm's performance. Although the geographic diversification enables a firm to realize economies of scale and scope, reduce fluctuations in revenue, a foreign subsidiary has a liability of foreignness that can lead to having higher costs, by not conducting the business activities as effectively as a local firm. Also, mistakes in various business decisions are more likely to happen (Lu & Beamish, 2004).

2.1.5. Modes of Entry: advantages and disadvantages

In order to minimize the obstacles and the internationalization costs, a firm must carefully analyze one by one, the several modes of entry to a foreign country. The entry mode chosen by the company will affect the firm's performance once it will save time and money for the firm. The most common foreign market entry modes are **exporting**, **licensing**, **joint venture** and, **sole venture** (Agarwal & Ramaswami, 1992). The first mode of entry mentioned, the **exporting** mode, is characterized by being a low resource mode. This means that, there is a lower investment by the firm, which will consequently bring a low risk and return for it. The low risk, although it provides an advantage to the firm, brings also as a disadvantage the fact the firm will not gain any control on the market, which might be essential for it. The second mentioned entry mode is the **licensing** mode, which is a mode that requires low investment, being also low on risk and then low on return. This entry mode is the one that provides least control to the licensing firm (Agarwal & Ramaswami, 1992).

The third entry mode is the **joint venture**. This mode involves relatively lower investment providing to the firm the risk, return and control to the equivalent of its participation. This entry mode is proven to be difficult to manage due to the cultural differences between the partners (Kaufmann & O'Neill, 2007). The fourth, and last, entry mode mentioned is the **sole venture**. This mode consists in a high investment and consequently a high risk and return mode, that provides to the firm a high degree of control of the investment.

It is expected that the firm chooses the entry mode that offers the highest risk adjusted return on investment.

2.1.6. Hofstede's dimensions and its importance to the internationalization process

As mentioned before, one of the main obstacles to the success of the internationalization of the company is the differences between the cultures. As stated by Kamoche (1996, p. 232) "each and every region, country or unit poses its own particular problems as well as a characteristic set of opportunities". Hofstede defines culture as "the collective programming of the mind that distinguishes the members of one group or category of people from others" (Hofstede, 2011, p. 3). After conducting several studies on how values in the workplace are influenced by culture, Hofstede has defined six dimensions of culture. These dimensions, or "aspect of a culture that can be measured relative to other cultures" (Hofstede G, 2011, p. 6) are: **Power Distance; Uncertainty Avoidance; Individualism; Masculinity; Long-Term Orientation; and Indulgence.**

The first dimension is **Power Distance**. This dimension measures the relationships between individuals of different status within a culture. This means that a society level of inequality is supported by the followers as much as by the leaders. The higher the Power Distance value the more comfortable people will be with norms and rules. The lower the Power Distance the more people strive to equalize the distribution of power and demand for justification of inequalities in power.

The second dimension is the **Uncertainty Avoidance**. This dimension concerns the society's tolerance for ambiguity or uncertainty. It indicates if a culture feels comfortable or uncomfortable in untrusted situations. A country with a high Uncertainty Avoidance value has rigid codes of belief and behavior and are not tolerant with unorthodox behavior and

ideas. A country with an Uncertainty Avoidance value lower tends to have a more relaxed attitude, where practice is more valuable than principles.

The third dimension is **Individualism**. This dimension represents the degree to which people in a country or region learn to interact with each other. This dimension's opposite is the **Collectivism**. So, a society can be an individualistic society or a collectivistic one. When belonging to an individualistic society, a person is expected to take care of herself/himself and their immediate family. In opposite, when an individual belongs to a collectivistic society he/she is inserted in a group, where the members are expected to look after each other. In this dimension, a society's position is reflected on the people's personal image, meaning this, if they use an "I" or a "We" when talking about themselves.

The fourth dimension is **Masculinity**. This dimension has as its opposite the **Femininity**. It is related to the distribution of values between the genders. A masculine society has a preference for achievement, heroism, assertiveness and material rewards for success. A feminine society has a preference for cooperation, modesty, caring for the weak and quality of life. The higher the masculinity value, the more competitive is a society. The lower the masculinity value the more consensus-oriented is a society.

The fifth dimension is **Long-Term Orientation** in opposite to **Short-Term Orientation**. This dimension stands that some cultures are more connected to its past while dealing with challenges of the present and the future. Societies with a high value on Long-Term Orientation have a more pragmatic approach, meaning this that they encourage thrift and efforts as a way to prepare to the future. Societies that have a low value on this dimension tend to maintain traditions and norms, taking societal change with skepticism.

Finally the sixth dimension is the **Indulgence** in opposite to **Restraint**. This dimension establishes if a society accepts or suppresses the gratification. This means that if a society has high values of Indulgence, it is more likely to allow the free gratification of basic and natural human drives that are related to enjoying life and having fun. If a society scores low in this dimension, meaning that it is a more restraint society, it is more likely to suppress gratification of needs and regulate it by imposing strict social norms.

As it is widely known, different countries around the globe have different cultures and different cultures represent different ways to react to a foreign firm. In order to avoid the cultural shock and the consequences that may come within, a firm must carefully analyze all the dimensions of the host country and compare them to the home country. In this way, a

firm will avoid all the uncertainty of the new country, along with the financial risks that may come with the internationalization process.

3. Chapter III – Methodology

3.1. Research Strategy

The present report has as its main objective the study of the internationalization process of CK Solar Academy to the Brazilian market, aiming to describe the strategy to adopt in entering a new market, as well as the main obstacles to the internationalization process. This work can be considered an action-research, which means that there was a collaborative partnership between the company and the researcher, who is part of it, over a matter that is concerned to the company (Saunders, Lewis, & Thornhill, 2009).

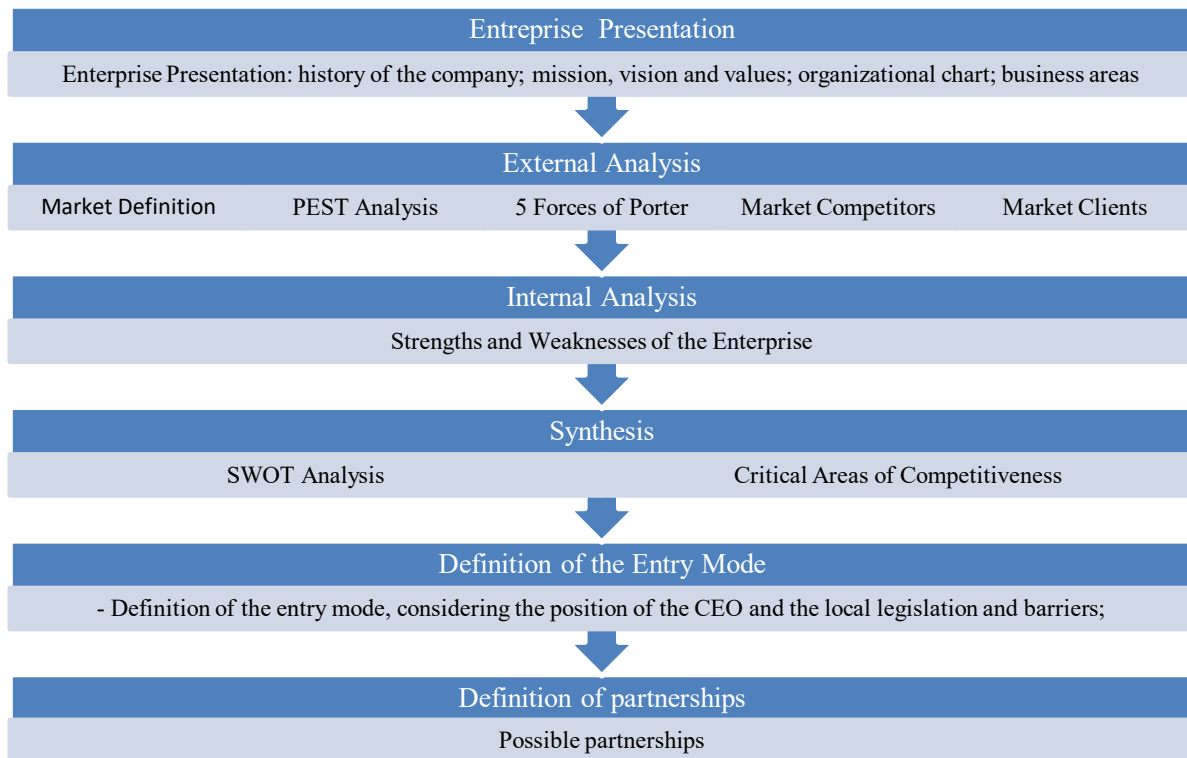
As a case study, the present work aims to answer the questions “how?” and “why?” developing a research strategy on a real life event, in which the limits between the event and the context are not clearly defined (Yin, 2001).

Being a single case study, meaning this that it only deals with one subject, the present work is focused on the internationalization of CK Solar Academy, one component of CRITICAL KINETICS, Unip. Lda, to Brazil, more specifically to the city of S. Paulo. The choice of the company to base this study on, came with the fact that it was where the internship was carried-out, integrated in the International Business Master which has favour the access to internal information.

3.2. Phases in the internationalization strategy formulation

The choice of performing the internship in CRITICAL KINETICS, Unip. Lda, came with the fact that the company only had a few partners in the few foreign markets in which is present. This brought the opportunity to develop a study on the future internationalization process of the company to Brazil.

For that, several phases of the study were carried out, in order to achieve the proper internationalization strategy to the company. Those phases are described below.



Tab. 1 - Strategy Formulation

(Source: developed by the author)

The first one phase was the Enterprise Presentation. In this phase it is presented the company's history, its mission, vision and values, its organizational chart and it business areas.

The second phase was the External analysis. In this one it was firstly defined the product to internationalize and the market to which to internationalize. It was developed a PEST analysis, a 5 Forces of Porter analysis, and a Market Competitors and a Market Clients analysis. The External Analysis was developed for the Portuguese Market and the Brazilian Market. The necessity to develop both analysis to the two markets came with the fact that the decision to internationalize and the market to which internationalize had already been made by the company.

The third phase was the performance of an Internal Analysis, where the strengths and the weaknesses of the company were presented.

The fourth phase was the development of a synthesis including a SWOT analysis and an analysis to the Critical Areas of Competitiveness.

The definition of the mode of entry was the next phase. Having the company already defined how they would like to enter the new market, this topic was developed having the

CEO's opinion as the basic source and analysing the local legislation and the viability of that mode of entry.

The last phase was the definition of possible partnerships, which can ease the company's entry in the new market.

3.3. Data Collection

All the necessary data collected to this project came from variable sources that complement each other. The diverse nature of secondary data sources comprised, official statistics, data collected from the website of the company, and archival research, using the administrative records and documents provided by the company.

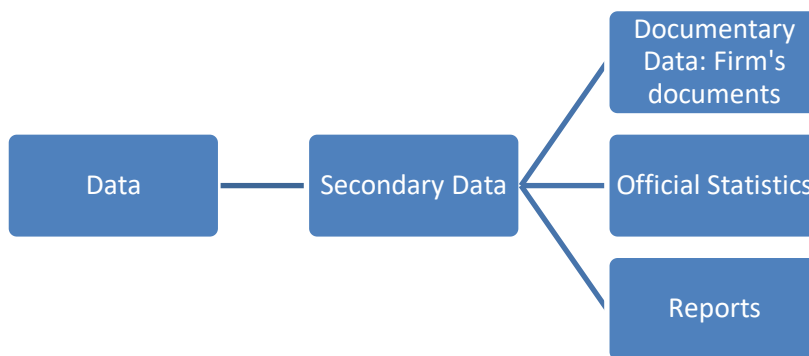


Fig. 1 - Data collection scheme

(Source: developed by the author)

The explanation of the Secondary Data used can be found in the table below. The table is divided in six columns and four lines. In the columns it can be found the description of the data and its classification, the main objective of the information in the present study, the scope of the information, the date in which the information was collected, and the source where it could be found. As to the lines, it is divided the type of information collected, namely the documentary data, official statistics and two major reports.

Description	Classification	Objective	Scope	Date	Source
Documentary Data: Firm's Documents	Secondary Data	Information mainly used on internal analysis: description of the company.	Portugal	2015-2016	Firm's Websites: http://critical-kinetics.pt/ http://www.cksolaracademy.com/
Official Statistics	Secondary Data	Information used on the external analysis	Portugal and Brazil	2015-2016	Portal Brasil: http://www.brasil.gov.br/ http://www.transparency.org/cpi2015 https://www.cia.gov/library/publications/the-world-factbook/geos/br.html http://data.worldbank.org/country/brazil
Market Study: PV Energy in Brazil	Secondary Data	Information used on the market prospection	Brazil	2016	Ondernemend, R. v. (2015). <i>Market Study: PV Energy in Brazil</i> . Nederland: Transfer LBC
Renewable Energy Potential of Brazil	Secondary Data		Brazil	2016	Meisen, P., & Hubert, J. (2010). <i>Renewable Energy Potential of Brazil</i> . Global Energy Network Institute.

Tab. 2 - Data Description

(Source: developed by the author)

4. Chapter IV – Case Study

4.1. Enterprise Presentation

CRITICAL KINETICS – Energy Consultants is an enterprise in the Photovoltaic area. The company works daily with its main objective of contributing to the changing of the energetic paradigm of nowadays. The enterprise operates mainly in Portugal but has also some partners in Mozambique, Angola and Brazil, in the following range of business areas: *SmartPV*; *AGRO-CK*; and *Mobilidade21*.

The company was created in May of 2011 by its single-founder Hugo Ricardo Barbosa Maganão (who owns 100% of the company's capital), with the main objective of operating in the renewable energies market. Hugo Barbosa has an electrical engineering degree by the University of Coimbra. During his life, he was an invited assistant professor in the Polytechnic Institute of Tomar, instructor in TÜV Rheinland's Post-Graduation Renewable Energy for subjects of Solar Thermal, Photovoltaic and Wind energy and, supervisor and jury in Post-Graduation Projects, among many other professional activities.



Fig. 2 - Logo of the Company

(Source: company's files)

In the pursuit of perfection, CRITICAL KINETICS started, since its beginning, looking in the Portuguese market for the best way to differentiate itself from the competitors. As a result, it is a company strongly implemented in the Photovoltaic market, being widely recognized by major of market players as a serious and professional entity. At the moment, the company has offices in Lisbon (*Almada*), and *Torres Novas*, and integrates two Engineers, three Trainee Engineers, three Renewable Energy Technicians, one designer and, three employees responsible for the development and commercialisation of CK. Although

there are twelve people mentioned above, only five of them are part of the company's organization chart.

4.1.1. Organizational Chart

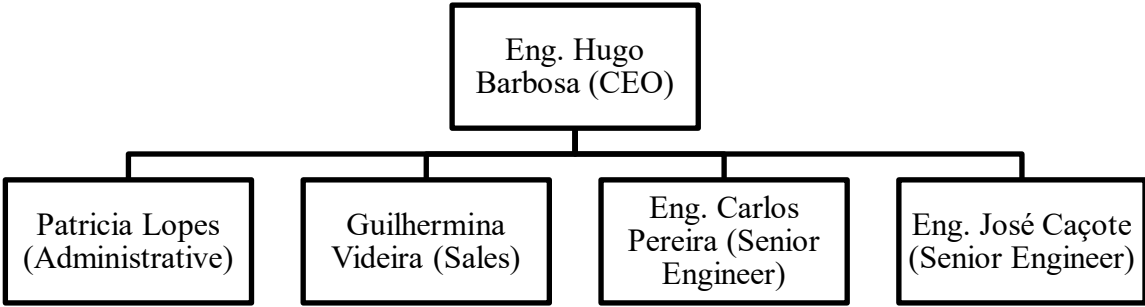


Fig. 3 - Organizational Chart of the Company
(Source: developed by the author)

4.1.2. Mission, Vision and Values

CRITICAL KINETICS was created with a very well defined strategy. Its vision is to conquer the trust of all the customers, being those individuals, business or institutions and to establish itself as a recognized entity in the most various fields of energy. It aims to work every day to build a solid structure that ensures decent conditions for all employees and, with that, allows them to achieve their professional and human fulfilment. The enterprise wants to be a company known not only for its desire to do well, but also for its willingness to share opportunities with other entities that are already established in the market, and grow with them.

The mission of the company is to work daily in order to promote the possible rational use of the available energy resources whether finite or renewable. The company was created with the objective of being the first organization in Portugal to join the knowledge to teach in a specific area of expertise such as the Energy field. In Portugal, there are a few training centres that offer professional specialization courses or advanced technical training, but do

not have an effective knowledge on the subjects ministered in a way that they do not compete in this market. Knowing that, CRITICAL KINETICS was born with the mission of gather these two fields that, until now, have never overlapped.

The values defended by the company include dedication, innovation, seriousness and professionalism, confidence, respect, ambition and, transparency and fairness. These values are all related with the relationship the company maintains with its customers. Dedication because the customer is the reason the company exists, and so it must do everything in its power to serve them good. Innovation because all the solutions are developed in order to overcome market expectations. Seriousness and professionalism because the company only offers what it can deliver and it takes its failures, never creating any expectations it cannot meet. Confidence because it does its work with total dedication. Respect because it puts itself on the client's side. Ambition because it invests in human resources that support its activity. Finally, Transparency and fairness because it does not play at various trays.

4.1.3. Business Areas

Created in 2011, the company was born in the context of the economic crisis. Therefore, due to the necessity of prevalence of the company, Hugo Barbosa decided to create several operational areas, so that the firm could increase its number of potential customers and prevail in such an unstable market. These operational areas are:

CK Solar Academy – which is the area that manages and provides intensive training courses in the renewable energies' sector.



Fig. 4 - Logo of CK Solar Academy

(Source: company's files)

AGRO-CK – which name was later changed to *AGROTECNOLOGICA*. It is the area that operates in the agro-industry market.



Fig. 6 - Logo of AGRO-CK

(Source: company's files)



Fig. 5 - Logo of AGROTECNOLOGICA

(Source: company's files)

Mobility21 – which is the area that provides electrical vehicles in alternative to fossil combustion vehicles.



Fig. 7 - Logo of Mobility21

(Source: company's files)

SmartPV – which is the area that provides the most recent products in the technological services inside the photovoltaic systems.



Fig. 8 - Logo of SmartPV

(Source: company's files)

The present study will focus, as mentioned before, on CK Solar Academy. As mentioned before, many formation companies in Portugal offer several courses and advanced technique formation in the Photovoltaic area. Although, these firms do not possess the effective knowledge once they are not competitors in the market. Following this logic, CK Solar Academy was born from the urge to put together both of this sides: the knowledge with the transfer of knowledge. This academy has a complete and wide range of courses that create successful professionals, by directing its courses to the actual needs of the market.

4.2. External Analysis

Given the fact that the company has already chosen the market to which it desires to internationalize, the following external analysis presents several chapters that are subdivided in three: the Portuguese Market, the Brazilian Market and the comparison between the two markets. This provides the opportunity to analyse the external environment at the same time in the Portuguese Market and in the Brazilian Market.

4.2.1. Market Definition

The product presented to be internationalized is the Photovoltaic Own-consumption courses to Brazil, more specifically to *S. Paulo*. The internationalization project consists in the internationalization of the Portuguese academy – CK Solar Academy – in the photovoltaic area to Brazil to train professionals able to face all the challenges brought by the market. Although it is not the first academy to promote this type of services, it is believed that this market in Brazil is still yet to explore. This thought is justified by the belief that the lack of formal education and professional training are a potential bottleneck for the industry, where all levels are needed, from in-company training to higher education (Ondernemend, 2015).

Thus, the main objective of CK Solar Academy is the implementation of its recognized education methods, to help the photovoltaic market in Brazil to grow and promote, this way, the increase of quality in the renewable energies market. Therefore, to have a more reliable and sustained decision, a specific study on the country and on the potential of the firm is presented below.

4.2.2. PEST Analysis

The PEST analysis is made by analyzing the Political, the Economic, the Technological and the Socio-cultural Factors in a certain market in order to better understand its contextual factors and its growth rhythm. This analysis will provide an overview of the different factors that must be taken into consideration before entering in a new market once they will affect the performance and the activities of the company in the long-term.

4.2.2.1. Political Factors

Portuguese Market

Portugal is a Unitary Semi-Presidential Republic since the Constitution in 1976, being Lisbon the capital and the biggest city. The powers are separated between the President of the Republic, the government, the assembly of the Republic and the Courts. The official language is the Portuguese and the official name of the country is Portuguese Republic. Portugal is divided in seven regions: North, Center, Lisbon, Alentejo, Algarve, Madeira and Azores. Madeira and Azores are autonomous regions in the Atlantic Ocean. The country has a total of 308 municipalities and 3092 civil parishes.

The current President of the Republic is Marcelo Rebelo de Sousa.

The Assembly of the Republic is composed by 230 deputies elected every four years. The Portuguese Republic operates a multi-party system at national, regional and local levels, being dominated by two political parties: the Socialist Party and the Social Democratic Party. The current government is headed by the Prime Minister António Costa and it is composed by a union between the Socialist Party, the Unitary Democratic Coalition (which includes the Communist Party and the Ecologist Party), the Left Bloc and the Democratic and Social Centre (people's party). This union came from the necessity of the Socialist Party to form a government with absolute majority. It would be expected that, by being the two more centralized parties, the Socialist Party would choose to join forces with the Social Democratic Party, but because of their history and the discrepancy between their ideas caused by the previous governments, the Socialist Party choose to join forces with the

smaller ones, trying a coalition and a more left oriented government. Nevertheless, and being the beliefs of the parties so distinct, the government's full stability is yet to achieve.

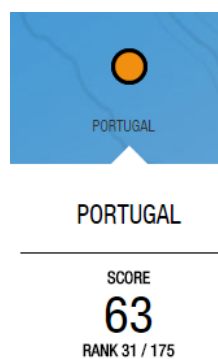


Fig. 9 - Portugal's Corruption Level

(<http://www.transparency.org/cpi2014/infographic/regional/european-union-and-western-europe>)

Relatively to the corruption level, and according to Transparency International, Portugal occupies the 31st position in a ranking of 175 countries, presenting a score of 63 (where 0 is highly corrupt and 100 is very clean). Although not being one of the most corrupt countries in the World, the Portuguese people consider the country extremely corrupt, more specifically the political parties and the military. This opinion is sustained by the large quantity of powerful men that are revealed corrupt by the Media. Nevertheless, and according to the Index of Economic Freedom, this corruption level poses no obstacle to the foreign investment in the country.¹

Since 1991, Portugal is part of the European Union, which is a political and economic union composed by 28 member states. The European Union has established a single currency, the Euro, in order to build a single market which would facilitate the travel of citizens and goods, eliminate the exchange rate problems, provide price transparency, create a financial market, stabilize prices and rates and provide a currency used internationally protected against shocks caused by the large amount of domestic trade in the Eurozone.

The Euro is controlled by the European Central Bank, which does not allow Portugal to have full autonomy concerning monetary policy. This, plus being restricted by the European Union due to the high public debt, brings to Portugal strong restrictions in terms of political budgetary, once it is controlled by the Growth and Stability Pact.

¹ <http://www.heritage.org/index/country/portugal>

Brazilian Market

Brazil is a Democratic Federative Republic with a presidential system. The president is the head of the state and the government and is elected every four years. The current President is Michel Temer. Although São Paulo is the biggest city in the country, Brazil's capital is Brasilia. The official name of the country is Federative Republic of Brazil, the official language is the Portuguese, and its currency is the Real.

The decision-making powers in Brazil are not centralized, since the control is divided between the federal district, twenty-six States, and the municipalities. Although, these three policy levels are autonomous, they guide themselves by five fundamental principles: sovereignty, citizenship, dignity of human beings, the social values of labor and freedom of enterprise, and political pluralism.

Brazil is geographically divided in five regions: North Region; Northeast Region; Central-West Region; Southeast Region; South Region. *S. Paulo* is located in the Southeast Region. Each region has a mayor and an elected legislative body, although they are independent from the Court of Law, and is divided in several states. Each state has autonomous administration, collect its own taxes and receive a share of taxes collected by the Federal government. This division into regions is used mostly for statistical purposes and to divide federal funds of development projects.

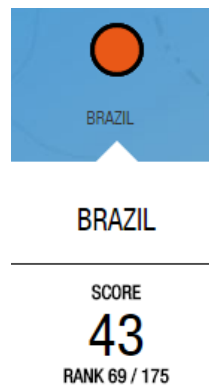


Fig. 10 - Brazil's Corruption Level

(<http://www.transparency.org/cpi2014/infographic/regional/americas>)

Relatively to the corruption level, and according to Transparency International, Brazil occupies the 43rd position in a ranking of 175 countries, presenting a score of 43 (where 0 is highly corrupt and 100 is very clean). The Brazilian corruption scandals are widely known all around the world, like for example the Petrobras case, where corrupt officials deviated billions of dollars into political parties' coffers and private hands. This proves that

the country, instead of making positive use of its influence as a geopolitical leader, abuses of power and deviates te countries' resources²

Comparison between the Brazilian Market and the Portuguese Market

In the graphic below it is possible to compare Brazil and Portugal in terms of Political Stability, Government Effectiveness and the Control of Corruption.

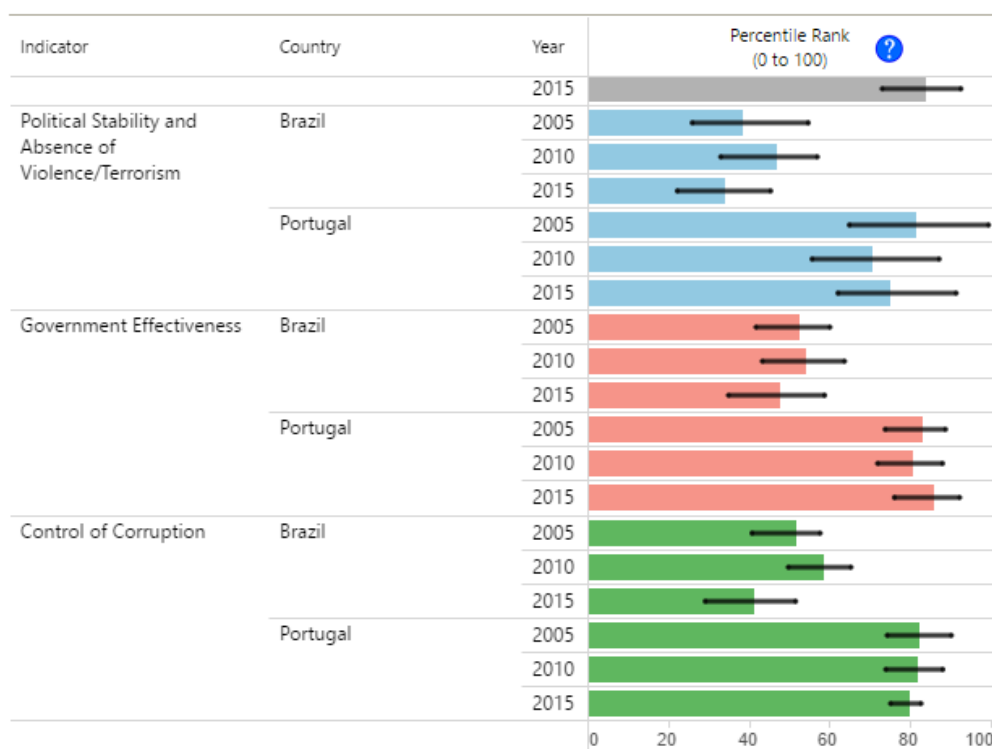


Fig. 11 – Worldwide Governance Indicators – Comparison between Brazil and Portugal

(Source: <http://info.worldbank.org/governance/wgi/index.aspx#reports>)

In terms of the durability and integrity of a current government regime, in other words, Political Stability, and as it is possible to see in the graphic above, the Portuguese values around the 80% and the Brazilian values under 60%. This means that the Portuguese society is more stable than the Brazilian society, in other words, the Portuguese people are more satisfied with the ruling party and the system of operations, being less susceptible to start a revolution. It is important to state that the political stability is determined by the amount of violence and terrorism expressed by citizens that is associated with the state.

As to the Government Effectiveness, it captures the perception of the quality of public and civil services as to the degree of its independence from political pressures, the

² <http://blog.transparency.org/2014/12/03/corruption-in-the-americas-the-good-the-bad-and-the-ugly/>

quality of policy formulation and implementation and the credibility of the government commitment to such policies. Once again the Portuguese values are higher than the Brazilian values, being the Portuguese ones above 80% and the Brazilian ones under 60%.

As to the Control of Corruption, meaning this the extent to which the public power is exercised for private gain and the strength and effectiveness of a country's policy and institutional framework to prevent and combat corruption. According to the graphic above, the Portuguese values round the 80% as to the Brazilian values vary between 60% in 2010 and 40% in 2015.

Also, and according to the Corruption Perceptions Index, and in terms of Corruption³, Brazil has a score of 43, being in the 69th position while Portugal is in the 31st position with a score of 63. Therefore, Brazil has a higher level of corruption than Portugal.

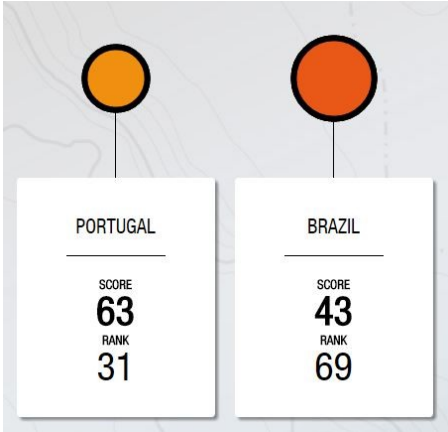


Fig. 12 - Comparison of the level of corruption

(Source: <http://www.transparency.org/cpi2014/infographic>)

Although the economic crisis has been affecting most countries, the renewable energies field has been gaining support by several major economies in the World. In this way, and due to the economic incentives given by the European Union, Portugal can invest in a foreign country that has its renewable resources yet to explore. However, the Portuguese investors must be careful once the laws in this field are not yet specific or even supportive to the investors. And also, considering that Brazil is not part of the European Union, the company must be careful in choosing the currency in which to negotiate and the political instability of the Brazilian country.

³ (International, 2016)

4.2.2.2. Economic Factors

Nowadays, the World economies are divided into four income groups: low, lower-middle, upper-middle and high economies based on the GNI per capita. The World Bank uses *The Atlas Conversion* in alternative to simple Exchange rates, in a way to reduce the impact of exchange rate fluctuations in the cross-country comparison. The low-income economies are defined as those with a GNI per capita lower than \$1,025, the lower middle-income with a GNI per capita between \$1,026 and \$4,035, the upper middle-income economies with a GNI per capita between \$4,036 and \$12,475 and the high-income economies with a GNI per capita above \$12,476.

The GNI (Gross National Income) per capita is related with Purchasing Power Parity (PPP) and it is measured in dollars, once the US dollar is the dominant currency in the World, followed by the Euro.

Portuguese Market

In the case of Portugal, the value of 2010 rounds the 22.960 thousand dollars, being in 2014 20.530 thousand dollars. This means that Portugal stays on the High-Income economies. Relatively to the GDP (Gross Domestic Product) take the value of \$198.931 billion dollars for 2015⁴.

According to the *World Factbook*⁵, the imports and the exports values decreased from 2014 to 2015. The estimate exports volume went from \$62.72 billion in 2014, to \$54.33 billion in 2015. The highest-values exported products are agricultural products, wine, oil products, chemical products, plastics and rubber, among many others. The most important trading partners are Spain, Germany, UK, USA, Angola, and the Netherlands. Portugal takes the 50th position comparatively to the rest of the world's countries in exportation and the 41th position in what comes to importation. Relatively to this last topic, the amount of imports commodities, the estimate value went from \$75.29 billion in 2014, to \$64.49 billion in 2015. The most relevant imported products are vehicles and other transport material, optical and precision instruments, computer accessories and parts, base metals, among others. The most important trading partners are Spain, Germany, France, Italy and the Netherlands.

Brazilian Market

⁴ (The World Bank, 2016)

⁵ (Central Intelligence Agency, 2016)

In the case of Brazil the value of 2014 GNI per capita rounds the 11.800 thousand dollars, being in 2015 9.850 thousand dollars. In this way, Brazil stays on the Upper-Middle-Income economies. Relatively to the GDP (Gross Domestic Product) take on the estimate value of \$1.775 trillion dollars for 2015⁶.

According to the *World Factbook*⁷, the imports and the exports values decreased from 2014 to 2015. The exports volume went from \$225.1 billion in 2014, to \$1.89.1 billion in 2015. The highest-values exported products are transport equipment, iron ore, soybeans, footwear, coffee, and automobiles. The most important trading partners are China, United States of America, Argentina, and Netherlands. Brazil occupies the 26th position comparatively to the rest of the world’s countries in exportation and the 27th position in what comes to importation. Relatively to this last topic, the amount of imports commodities, the value went from \$229.2 billion in 2014, to \$174.2 billion in 2015. The most relevant imported products are machinery, electrical and transport equipment, chemical products, oil, automotive parts, and electronics. The most important trading partners are China, United States of America, Germany, Argentina, and Nigeria.

Comparison between the Brazilian Market and the Portuguese Market

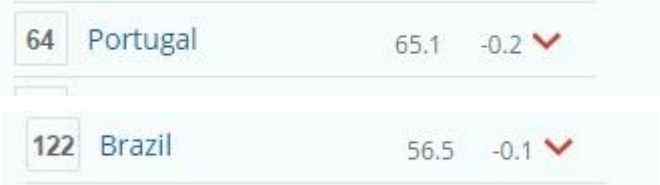


Fig. 13 - Economic Freedom Environment: Countries Classification

(Source: <http://www.heritage.org/index/ranking>)

In terms of **Economic Factors**, namely concerning the Economic Freedom Environment⁸, Portugal’s economic freedom score is 65.1%, meaning that its economy is the 64th freest in the current year, while Brazil’s economic freedom score is 56.5%, making its economy the 122nd freest in the 2015 Index. Nevertheless, the overall score decreased in both countries since last year, because of the declines in property rights, the monetary freedom, the trade Freedom and Financial Freedom. This information makes Portugal a “Moderately Free” country while Brazil is “Mostly Unfree”.

⁶ (The World Bank, 2016)
⁷ (Central Intelligence Agency, 2016)
⁸ (2016 Index of Economic Freedom, n.d.)

This information will reflect on the easiness of the entering of the Portuguese firm in the Brazilian market, once the economic freedom will have an impact on the investors will to support financially a foreign enterprise, with a different currency in this type of market in this country. It is important that the currency in which the trades are to be made is defined before the trades begin, and analyzing the surrounded environment the Euro is more stable than the Real, so the monetary exchanges should always be done in Euros.

4.2.2.3. Technological Factors

Portuguese Market

According to PORDATA, the major part of the technological research in Portugal is conducted by public universities and state managed institutions, like INEGI (Mechanic Engineering and Industrial Management Institute) and INETI (National Institute of Engineering, Technology and Innovation). It is the Ministry of Sciences, Technology and College Education. Among the major institutions not supported by the state are the Gulbenkian Science Institute and the Campalimaud Foundation.⁹

Portugal has also agreements with several scientific organizations like ESA (European Space Agency) and MIT (Massachusetts Institute of Technology).

Brazilian Market

In consideration of the **Technological Factors** of Brazil, the major part of the research is conducted in this country by universities and public research institutes, since the majority of funding comes from government agencies. The country is a pioneer in the search of oil in deep water, has an operational Synchrotron Laboratory, and has the second largest dam in the World¹⁰.

⁹ <http://www.pordata.pt/Tema/Portugal/Ci%C3%A2ncia+e+Tecnologia-24>

¹⁰ Itaipu Dam (Meisen & Hubert, 2010)

Comparison between the Brazilian Market and the Portuguese Market

According to The World Bank, Portugal has been investing more in the Science and Technology development than Brazil. According to the graphic below, in the past 10 years, the Brazilian government has been increasing the percentage of the GDP invested in the research and development of the Scientific and Technological fields in the country unlike Portugal. Portugal investment in the Scientific and Technological field was inferior to the Brazilian one until 2006. After this year, the Portuguese investment has rose up to more than 1.5% of the GDP in 2009. After this year and until today the investment has been declining, contrasting in this way with Brazil, that each year is investing more in this field.

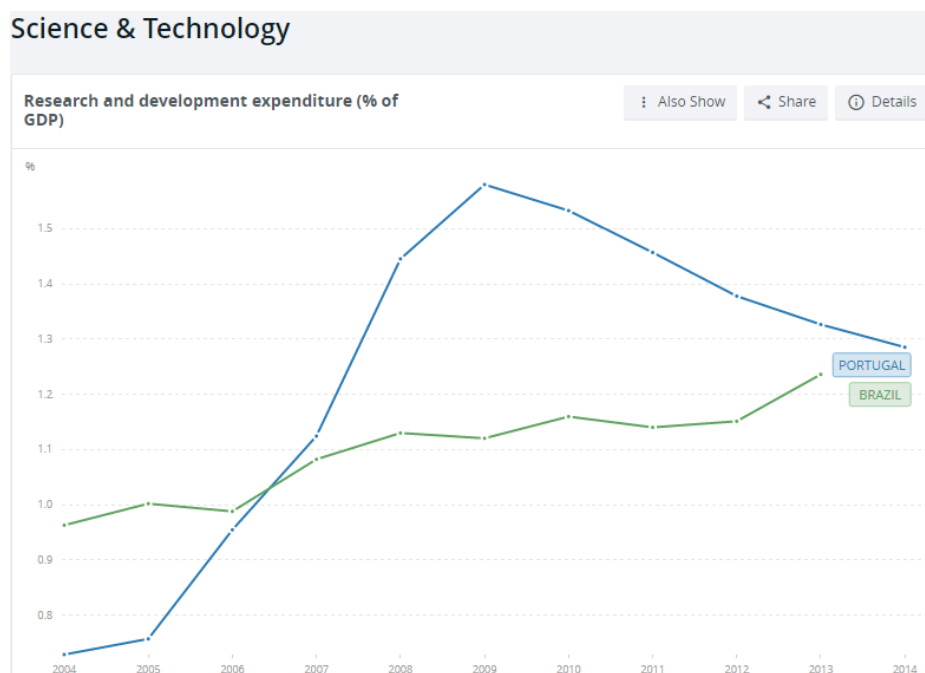


Fig. 14 - Research and Development Expenditure

(Source: <http://data.worldbank.org/topic/science-and-technology?end=2014&locations=PT-BR&start=2004>)

This means that, although the investment in renewable energies is still yet to achieve its peak, in Brazil each year the investment in the Scientific and Technological areas grow. Portugal is one of the countries in the World that uses more clean and renewable energy, producing enough to sell it to Spain. This means that Portugal has expertise workforce prepared to work in this field and in Brazil, since this field is still yet to reach its full potential and there is a low number of competitors in this market that it is always evolving.

4.2.2.4. Socio-Cultural Factors

In relation to the **Socio-Cultural Factors**, it was analysed information related with Hall's Typology, Demographic Indicators and Hofstede's Cultural Typology.

Portuguese Market

Concerning **Hall's Typology**, Portugal, is defined as a High-Low Context Culture. This is justified by the collective nature of the Portuguese people. Portuguese people are more social, expressive and interpersonal oriented. Having a higher immediacy when compared to other cultures brings Portugal to the lower context of Hall's typology. Being a contact culture, Portuguese people stand closer and touch more when together, turning smells and other nonverbal clues very important. This will imply that the Portuguese culture is classified as a higher context orientation, putting Portugal in the middle of Halls context orientation scale. As to the time, the Portuguese culture is a polychromic culture once Portuguese are known for performing several tasks at the same time and, High Context Cultures are considered polychromic cultures.

As to the **Demographic Indicators** it will be considered the population density, aging indicators, resident population, population growth rate, literacy, employment and unemployment. As to the first one, the population density, there are 112,1 inhabitants per km². As to the aging indicators, and as we can see in the graphic below, in 2010 the major part of the population's age stood between the 25 years-old and the 59 years-old. Projections defend that there is an aging of the working population.

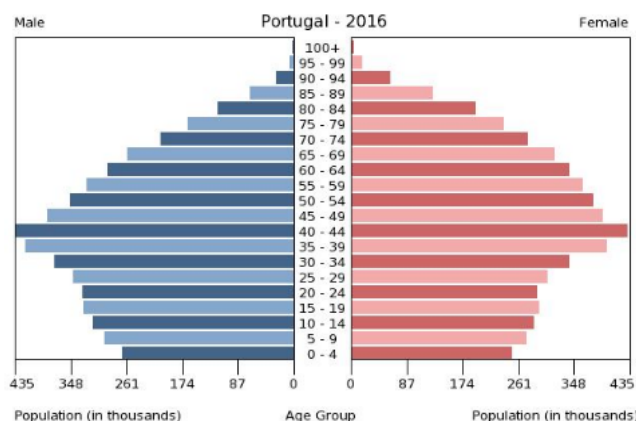


Fig. 15 – Population Pyramid (Estimate)

(Source: <https://www.cia.gov/library/publications/the-world-factbook/geos/po.html>)

Relatively to the resident population, there are 10 341 330 inhabitants in the country, and the average growth rate is 0.197% in the periods 2001-2011, being lower than 1991-

2001, where the value stood in 0.489%. As to the literacy level has a percentage of 95, being the percentage of people with a higher degree has been growing from less than 5% in 1991 to more than 10% in 2011, and the percentage of people without any education has been decreasing from almost 35% in 1991 to under 20% in 2011. It is expected for a citizen to spend 17 years in the school. In April, 2015 the employment rate stood in 51.2%, and the unemployment rate stood in 13%.

In 2016 the unemployment affected nearly 10.5% of the population. From this value 10% of the unemployed population stood between the age of 25 and 54 years old. In terms of education and scholarly level, according to PRODATA, the unemployment affects 11.8% of the people with the education until the 9th grade. The next school degree that is highly affected is the high school and post-high school, where 12.2% of the people are affected. As to the population with a higher degree the unemployment affects 8.4% of the citizens. When there is no scholarly at all, the unemployment rate reached the 13.1%. The unemployment is more common in the male than in the female citizens.¹¹

Relatively to **Hofstede's Cultural Typology**, it is presented below the graphic corresponding to Portugal as well as an analysis concerning the six Hofstede's variables, namely Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long-Term orientation and Indulgence.

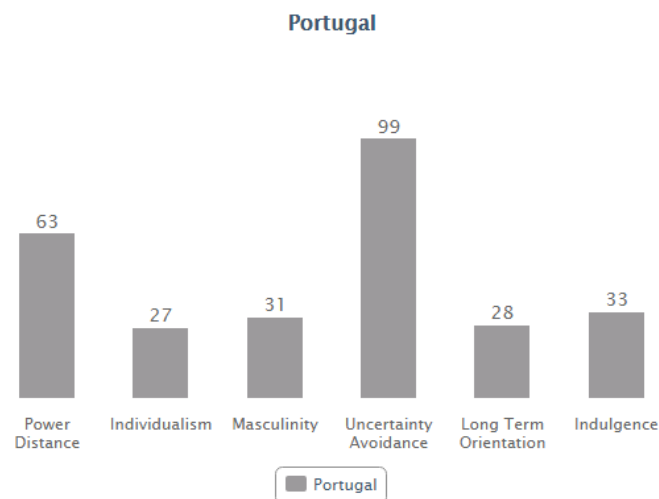


Fig. 16 - Hofstede's Dimensions – Portugal

(Source: <https://geert-hofstede.com/portugal.html>)

¹¹ <http://www.pordata.pt/Subtema/Portugal/Popula%C3%A7%C3%A3o+Desempregada-9>

In relation to the Power Distance variable, Portugal scores 63. This means that Portugal is a society where inequalities are accepted and, the hierarchy is an important factor. It is a society where the superiors may have privileges and are frequently inaccessible.

Relatively to Individualism, Portugal has a classification of 27. This classifies Portugal as a collectivist society meaning that the Portuguese look after each other and not only themselves and their immediate family. In terms of work environment, the focus is on the surrounding environment and not on a specific task.

In consideration to Masculinity, Portugal has a score of 31, being in an intermediate level. In this way, the country focuses on a consensus, with a tendency to achieve a compromise and negotiating in conflicts. The Portuguese people value equality, solidarity and quality of their working lives.

On the other hand, there is Uncertainty Avoidance variable. In this case, Portugal scores 99 in this dimension. This means that the rules and security are welcome and if lacking, it creates stress. Portugal has a high preference for avoiding uncertainty and has rigid codes of belief and behavior. In work environment, Portuguese people believe that time is money and have an urge to be busy and work hard, prevailing the precision and punctuality in this environment.

The Long-Term Orientation dimension shows a score of 28, this means that Portuguese respect the traditions, having a small propensity to save for the future, focusing on achieving quick results. They also have a strong concern with establishing the Truth.

Lastly, the Indulgence presents a score of 33. In this way, the Portuguese exhibit a tendency for cynicism and pessimism, being a restrained society. This means that they do not emphasize leisure time and control the gratification of their desires.

Brazilian Market

Concerning **Hall's Typology**, Brazil, is defined as a High Context Culture. This is justified by the existence of many contextual elements that help people understand the rules, which are said to be very confusing for a person who does not understand the "unwritten rules" of the Brazilian culture. The Brazilian culture is a polychromic culture, because not only there is a tendency for Native Americans to be polychromic and, High Context Cultures are polychromic but because Brazilians are known for always putting their relationships with others first.

As to the **Demographic Indicators** it will be considered the population density, aging indicators, resident population, population growth rate, literacy, employment and unemployment. As to the first one, the population density, in 2010 the average was 22.43 inhabitants per km², having the Southeast region an average of 86.92 inhabitants per km². As to the aging indicators, and as we can see in the graphic below, in 2010 the major part of the population's age stood between the 10 years-old and the 40 years-old.

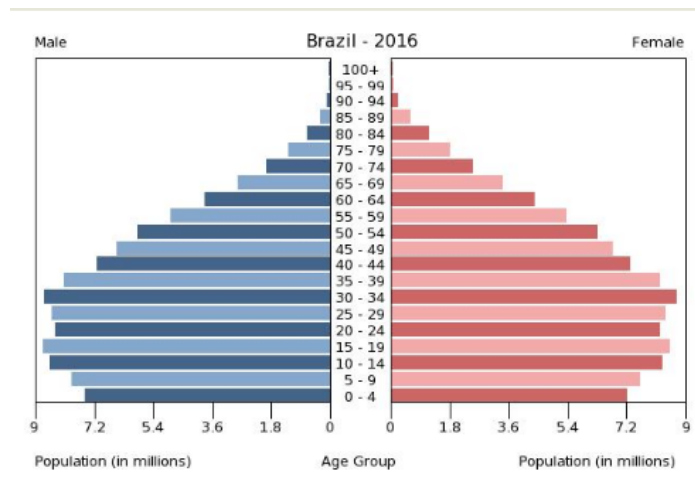


Fig. 17 – Population Pyramid (Estimate)

(Source: <https://www.cia.gov/library/publications/the-world-factbook/geos/br.html>)

Relatively to the resident population, there are 190.755.799 inhabitants in the country, and the average growth rate is 1.4%. As to the literacy level has a percentage of 90, being the average value of years spent in school for citizens between 10 and 24 years-old, 8 years. It is expected that a citizen spends 15 years in the school. The highest region with higher education is the southeast region, with an average value of 8.7 years.

In 2016 the unemployment affected nearly 6.8% of the population. From this value 15.2% stood under the age of 25 years old. In terms of education and scholarly level, the unemployment affects 10.2% of the population with the education until the 9th grade. The next school degree to be affected is the high school and post-high school, where 8.6% of the population is affected. As to the population with a higher degree the unemployment affects 4.5% of the population¹². The unemployment is more common in the female than in the male citizens.¹³

¹² <https://nacoesunidas.org/no-brasil-desemprego-afeta-jovens-mulheres-e-profissionais-com-menos-escolaridade-aponta-cepal/>

¹³ http://www.theglobaleconomy.com/Brazil/Unemployment_rate/

Relatively to **Hofstede's Cultural Typology** it is presented below the graphic corresponding to Brazil as well as an analysis concerning the six Hofstede's variables, namely Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long-Term orientation and Indulgence

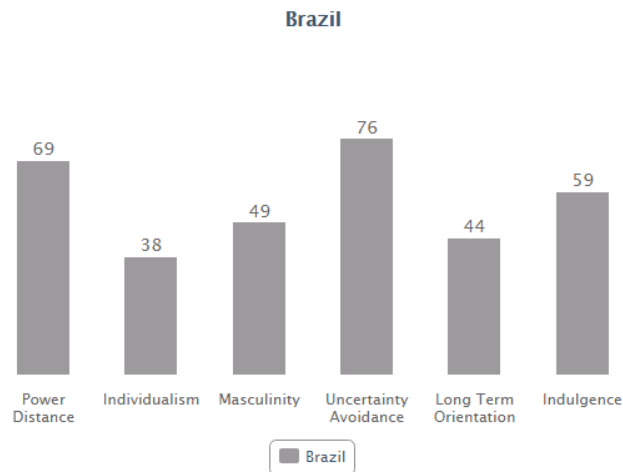


Fig. 18 - Hofstede's Dimensions – Brazil

(Source: <https://geert-hofstede.com/brazil.html>)

In relation to the Power Distance variable, Brazil has a score of 69. This means that it is a society where inequalities are accepted and, the hierarchy is an important factor. It is a society where the superiors may have privileges and, are frequently inaccessible. The power is centralized in Brazil, although the states and municipalities have also some power on their own.

Relatively to Individualism, Brazil has a score of 38. In this sense, Brazil is a collectivist society. A society with this level on this dimension is reflected on the people's thought as a "we" instead of an "I". In this society, it is also expected to start the meetings with general conversations in order to get to know the other part before doing business.

In consideration to Masculinity, Brazil has a score of 49, being in an intermediate level. In this way, Brazilians intend to achieve a compromise. Indeed, it is so important to be the best as to like what you do.

On the other hand, there is Uncertainty Avoidance variable. In this case, Brazil has a score of 76. In this sense, laws, rules and all the bureaucracy are essential to make the World a safe place to live.

The Long-Term Orientation dimension shows a score of 44, this means that the Brazilians maintain an equilibrium between traditions and norms and, the modern education that prepares them to the future.

Lastly, the Indulgence presents a score of 59. In this way, this society exhibits a willingness to realize their impulses and desires with regard to enjoying life and having fun. Moreover, people have a positive attitude, and have a tendency to be optimistic.

As to the city of S. Paulo, it must be taken into consideration the following aspects: there are approximately 86.92 people for km²; the electricity consumption is 240,084 GWh; the solar radiation is 5.6m Wh/m². The Southeast Region is responsible for 55.4% of Brazil's GDP and for 51.8% of all the electricity consumption. It is the most developed, industrialized and economically important region of the country.¹⁴

Comparison between the Brazilian Market and the Portuguese Market

Concerning **Hall's Typology**, Brazil is defined as a High Context Culture and Portugal is defined as a High-Low Context Culture. This means that in both countries there is the tendency to stand closer when talking and touch more when together, turning smells and other nonverbal clues very important, which may be very confusing for a person who does not understand the "unwritten rules". Both countries are polychromic cultures. The difference between the countries is the closeness of the Portuguese people.

As to the **Demographic Indicators** it will be compared the previous analysed indicators: the population density, aging indicators, resident population, population growth rate, literacy, employment and unemployment.

Although Portugal has a smaller number of inhabitants when compared with Brazil the population density is higher. This is justified by the fact that Portugal has 10 341 330 Portuguese inhabitants in 92.090 km² contrasting with 190.755.799 inhabitants in 8,514,877 km² in Brazil. This means that Brazil has approximately 22.43 inhabitants per km² and Portugal 112,1 inhabitants per km². The population growth rate stands in 0.197% for Portugal and 1.4% for Brazil.

Relatively to the aging indicators, in both countries there is an aging of the working population, being the Portuguese people older than the Brazilian people. In Portugal, the

¹⁴ (Ondernemend, 2015)

major part of the population stands between the age of 25-years-old and 59 years-old, as in Brazil it stands between 10 years-old and 40-years old.

As to the literacy level, Portugal has a higher percentage (95%) when compared to Brazil (90%). Portuguese citizens are expected to spend more years in school (17 years) that Brazilian citizens (8 years).

In 2016, the unemployment rate stood in 6.8% in Brazil, contrasting with 10.5% in Portugal. In all the school levels analysed, it is possible to conclude that Portugal has a higher unemployment rate than Brazil. For instance, when the citizens have a scholar degree equivalent to the 9th grade, the unemployment rate in Brazil reaches the 10.2% contrasting with the 11.8% in Portugal, a difference of 1.6%. As to the high school and post-high school, 12.2% of the Portuguese population is affected, contrasting with the 8.6% of the Brazilian population. As to the higher degree the unemployment affects 8.4% of the Portuguese citizens, and only 4.5% of the Brazilian citizens. This discrepancy of values can be justified by the lack of educated population in Brazil. Contrasting with Portugal, the unemployment is most common between the female population in Brazil than in Portugal. It is possible to conclude that the courses given by the company in the Photovoltaic Area may give to the unemployed people with a higher degree, the opportunity to acquire more knowledge which will give them a leverage in the labour market.



Fig. 19 - Unemployment Rate Comparison Brazil and Portugal

(<http://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=BR-PT>)

Relatively to **Hofstede's Cultural Typology** it is presented below a comparison between Brazil and Portugal, as well as a comparison of the six Hofstede's variables, namely Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long-Term orientation and Indulgence.

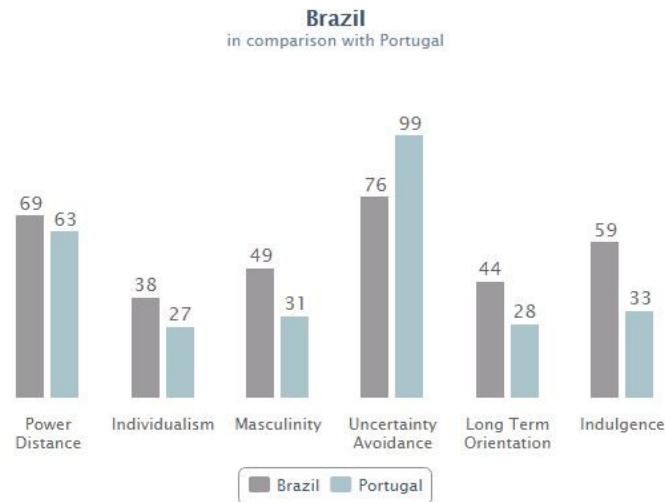


Fig. 20 - Hofstede's Dimensions: Comparison between Brazil and Portugal

(Source: <https://geert-hofstede.com/brazil.html>)

In relation to the Power Distance variable, Brazil has a score of 69 against the 63 of Portugal. This means that (more than Portugal) it is a society where inequalities are accepted and, the hierarchy is an important factor. It is a society where the superiors may have privileges and, are frequently inaccessible.

Relatively to Individualism, both Brazil and Portugal are collectivist societies. In terms of work environment, they focus on the surrounding environment and not on a specific task. In both societies, it is expected to start the meetings with general conversations in order to get to know the other part before doing business.

In consideration to Masculinity, both countries have a relatively close score. In this way, both cultures tend to achieve a compromise, negotiating when in conflicts.

On the other hand, there is Uncertainty Avoidance variable. In this sense, not only in Portugal but also in Brazil, the rules and security are welcome and if lacking, it creates stress.

The Long-Term Orientation dimension Brazil shows a score of 44 against the 28 of Portugal. This means that the Brazilians maintain an equilibrium between traditions and

norms, unlike Portugal, that respects traditions and has a small propensity to think about the future.

Lastly, the Indulgence presents a score of 59 in Brazil against the 33 in Portugal. In this way, the Brazilian society, contrasting with the Portuguese society, exhibits a willingness to realize their impulses being a more optimistic culture than Portugal.

Through the above shown graphic, it is possible to observe that the dimensions between Brazil and Portugal are not that different with the exception of Uncertainty Avoidance and Indulgence.

It is inaccurate for one to think that since the countries share some of its history and a language they will naturally share the culture. Portugal and Brazil share some aspects of their culture, and as it is possible to see in the graphic above, only the Power distance values are close from one another, which will affirm them to be different countries with different ways to do business.

4.2.3. Porter's Five Forces

In order to analyze the industry structure and the corporate strategy of a company, Michael E. Porter developed a model, named Porter's Five Forces. This model identifies and analyzes the five competitive forces that shape an industry, helping in this way the determination of the weaknesses and strengths of a company. These forces are the Competition in the Industry, the Potential of New Entrants into the industry, the Power of Suppliers, the Power of Customers and the Threat of Substitute Products.

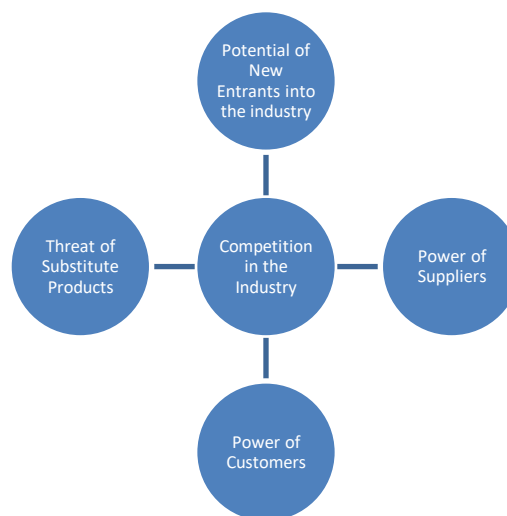


Fig. 21 - Porter's Five Forces Scheme

The Competition in the Industry reveals the number of competitors and their ability to threaten a company. A larger number of competitors and equivalent products and services will command the power of a company, once the suppliers and the buyers pursue the company that is able to provide a suitable deal. The Potential of New Entrants into an Industry reveals that the force of new entrants into a market will affect a company's power in that same market. The company's position in a certain market may be weakened by the time and money that costs a rival to enter the same market and become an effective competitor. The Power of Suppliers shows how easily suppliers can increase the price of goods and services. It is affected by the number of suppliers of key pieces of a good or service, the uniqueness of the supplies and the costs of switching to another supplier. The lower the number of suppliers, the higher will be the dependence of the company on a certain supplier and the higher will be the supplier's power. The Power of Customers deals with the customers' ability to increase or decrease the prices. It is affected by the number of customers a company has, how significant each customer is and the cost of the customer switching to another company. A small client base holds more power than a bigger one. The Threat of Substitutes reveals the possible substitutions that may pose a threat to the company. If a tool or service provided by a certain company can be replaced by another tool or service, the company's power can be weakened. This substitution may occur if another company provides the tool or service needed, or just if the task can be performed manually, easing and reducing the cost of the service or tool.

The following sub-chapters will analyze and evaluate CK Solar Academy in both the Portuguese market and the Brazilian market. It will only be evaluated CK Solar Academy and not CRITICAL KINETICS, Unip. Lda, once it is the first one that will be internationalized to the Brazilian market.

4.2.3.1. Competition in the Industry

Portuguese Market

In terms of competition in the Portuguese market there are some opponents that can be considered, being the major one *Master D*. There are also other small companies that may provide courses in the same area as the company. The number of competitors in the area and in the Portuguese market has been slowly increasing, once the photovoltaic area is gaining more power. However, among the known and more important competitors in the

Portuguese market, only CK Solar Academy can provide the courses with instructors that have field experience. Once the Photovoltaic market is still yet to explore, and there are not many financial supports in this field, the few competitors turn out to be a great threat to the company.

Brazilian Market

In terms of competition in the Brazilian market there is only one major opponent, *Blue Sol*. As in the Portuguese market, also in the Brazilian one there are other small companies providing courses in the same area that the company, for instance *neosolar*. Unlike the Portuguese, the Brazilian energy market moves really fast and there is a high demand on the photovoltaic energy solutions¹⁵. This means that the few competitors of the company in this market do not present as a threat to the success of it in the market.

4.2.3.2. Potential of New Entrants into the industry

Portuguese Market

Although there are not many financial supports, and being the market moving at a really slow pace, there is the possibility of entrance of new competitors in the Portuguese market. Knowing that the only thing that distinguishes CK from its competitors is the field experience, anyone with that same experience can enter the market and easily provide the same services, with the same quality for a lower price. The costs associated with the entry on this market are really low. Nowadays there is not many technology associated with this type of services. A CK Solar Academy competitor, only has to have a degree in the area, or to hire someone with a degree in the area (and the expertise to teach), have a computer, a projector and a place to perform its courses.

Brazilian Market

The Brazilian Government is strongly in favor of clean energies' solutions, having several programs to stimulate the use of solar energy and making it more likely for a company to invest in this business area. In this way, there is a wider possibility of new entrants into this industry in this market which can have a positive and at the same time a

¹⁵ (Ondernemend, 2015)

negative aspect for the entering of CK Solar Academy in this market. This aspect is the easy access of the Portuguese enterprise to this new market. Although the enterprise can face an easy access to this market, so can other enterprises, which will interfere with the performance of the company.

4.2.3.3. Power of Suppliers

Portuguese Market

The instructors of the courses can be considered the suppliers of the company, once the courses depend on if there is anyone who can teach them. Acknowledging that the company distinguishes itself from the competitors in the instructors of the courses, it is positive to state that there are not many possible suppliers that can correspond to the profile expected by the company for its employees. This means that the company depends on its suppliers and they have more power than what is desired.

Brazilian Market

In what comes to the Brazilian market and in a primary phase, the company will dislocate some of its suppliers to the new market. After the primary phase, it is possible that the company considers the hypothesis of offering an opportunity to work with them, to some of the courses' graduates. The exclusion of Brazilian engineers, in a primary phase, comes with the fact that there is an urge to evaluate the real knowledge of the possible future suppliers, before hire them.

4.2.3.4. Power of Customers

Portuguese Market

To the type of business practiced by the company, the customer does not have great power. This comes with the fact that, since the courses are paid in its totality before they start, a customer cannot demand a refund, unless it presents a viable justification. It can only be considered that the customer has power when it comes to the evaluation of the course and the advice of it to other possible customers. In this field, the power of the customer to advice other possible customers is the most important, once one can easily support its choice of a course in another's opinion of it.

Brazilian Market

The customer's opinion of the company in the host country is more important than in the home country, once it helps building the image of it in the new market. In this way, the customer represents the most important factor of a company's success when entering a new market.

4.2.3.5. Threat of Substitute Products

Portuguese Market

The only way the courses given by the company can be replaced, is if schools offer that specific classes integrated in its educational offer. Although, if this happens, there might exist some engineers that did not had the possibility to take this classes during their school years. If this happens the alternative solution for the company is to provide this courses to a smaller price than they are offered at the universities or the institutes.

Brazilian Market

As to the Brazilian market, the threat of substitute products stands the same as to the Portuguese market. However, a specific course given by a company from a developed country, will add prestige to a Brazilian engineer's curriculum.

All in all it is possible to conclude that the Brazilian market, although presenting some threats to the viability of the company presents itself as a good country to invest. First of all the fact that there is only two major opponents to the company, brings some leverage to the company that, when associated to the fact of being from a developed country, will attract more clients to the company and instructors that might want to be associated with an internationalized company. This, by itself will improve the reputation of the company in the foreign market.

Also, the quantity of programs that the Brazilian Government has to stimulate the investment in renewable energies, will help the company in a primary phase of investment, easing the transaction to this new market.

4.2.4. Expected Clients

The expected clients to the service provided by the company in the Brazilian market are the same that in the Portuguese market: students and engineers.

The company aims to invest mostly in the students' formation. As to the profile of the students, they should have higher education, ideally from an engineering course, related or not with the renewable energies' area. The experience on the field is not a requirement for one to participate in the course. As to the profile of the engineers, and like the students, they might not have any experience related with the renewable energies area.

However, it must be taken into consideration that if the experience in the field is already acquired by the individual who takes this course, it may be an advantage to the trainee in the course's final exam.

Portuguese Market

Relatively to the Portuguese market, the engineering courses are the ones that present the highest values of inscriptions, 75.899 students in 2015, nearly 20% of the students that enroll in universities and polytechnic institutes.

Also, in 2011, the year of creation of the company there were 14.563 students that concluded a course in the engineering area. Considering that some of the engineering graduates tend to leave the country looking for a better life, there are still a few that choose to stay in the country and try to adapt themselves to the market urges. If we consider that since 2011 until 2014 there were 59.470 graduates from engineering courses¹⁶, and that since 2011, 4% of the engineers left the country¹⁷, there were still nearly 35.682 possible candidates to enroll the courses given by the company.

Brazilian Market

As to the Brazilian market, in 2010, 200.000 students enrolled in the engineering courses, representing only 13% of all the students that enroll in the university. From this 200.000 students, and at the end of the 5-year course, only 32.000 students will be prepared for the market¹⁸.

¹⁶ PORDATA

¹⁷ PÚBLICO

¹⁸ (CONFEEA, s.d.)

Between 2010 and 2013 the number of hired engineers rose from 146.1 thousand to 237.7 thousand, representing a growth of 87%.

According to CONFEA nowadays there are only 6 engineers for every 100 thousand workers, when there should be 25 engineers for every 100 thousand people. This represents a great opportunity to the company once it can help forming more and the qualified engineers that the market needs in this area.

4.2.5. Market Competitors

Relatively to the market competitors, both in Portugal and in Brazil it is possible to find several small companies providing the same services that CK Solar Academy provides. In the Portuguese market the photovoltaic market is unexplored but there are not many financial supports to the population related to this clean way to produce energy contrasting with the Brazilian market. In this market, the clean energies are supported by the government and it is possible to encounter several financial supports by the state, making the demand for this solutions high and the few competitors of the company in the market representing a small threat.

Portuguese Market

In the Portuguese market, CK Solar Academy has several competitors. Among them, we can stress *Master D*.

MasterD, had its beginning in 1994 in Zaragoza, Spain and has as its main focus the online courses. This gives the company the opportunity to adopt different work rhythms, adapted to the needs of every individual. The company offers courses in the Renewable Energies' area and in other different areas. The company is present in Oporto, Lisbon, Coimbra and Faro and it is certified by APCER (Portuguese Certification Association). Year after year the company has an average of 25.000 students in the wide range of courses it offers.

Brazilian Market

The logo for MasterD, featuring the word "master.d" in a bold, orange, sans-serif font.

Fig. 22 - MasterD Logo

(Source: <http://www.masterd.pt/>)

In this area of work, and to the best of our knowledge, CK Solar Academy only has two major competitors in the Brazilian market: Blue Sol and Neosolar.

Blue Sol started its activities in 2009 with the main objective to train professionals and to develop the market. It is the major company in the area in Brazil, having until now more than 6 hundred companies as its customers, being present in all Brazilian states.



Fig. 23 - Logo of *Blue Sol*

(Source: <http://bluesol.com.br/>)

Neosolar started its activity in 2010, in S. Paulo with the main objective to give complete solutions in the solar and photovoltaic energy, from making projects to supplying and installing equipment. To complete its range of offer, the company provides courses in the photovoltaic area. The company provides its services, mainly in S. Paulo, Brazil.



Fig. 24 – Logo of *Neosolar*

(Source: <http://www.neosolar.com.br/>)

4.3. Internal Analysis

As mentioned before, in the presentation of the enterprise, CRITICAL KINETICS was founded in 2011 by Hugo Barbosa. CK Solar Academy was born at the same time of CRITICAL KINETICS, expanding in this way the range of products offered.

Nowadays, and when compared to its competitors, the company has a unique workforce that is qualified and has experience in field. Among the several strengths when compared with its competitors, we can stress: the wide range of offer to the market; the unique computer programs given to its students that will allow them to adapt the budgets made to their clients' individual necessities; and the Eco-Friendly behaviour, granted by the

use of the energy produced through solar panels in its courses. In this way, we can identify the strengths as:

- Expertise workforce;
- Knowledge of the market;
- Low number of competitors;
- Wide range of offer;
- Eco-Friendly behaviour;
- Unique computer programs and tools.

As to the weaknesses when compared to the competitors, the ones that concern the company are: the share of non-coded unique programs, meaning this that the tools and top programs given in the company's courses can easily be shared with people that have not participate in them; and the reduced number of Human Resources, once the company focuses mainly on having several engineers working, lacking in administrative personnel to help with the bureaucratic work. We can identify the weaknesses as:

- Low number of Human Resources;
- Lack of offices throughout the country to reach the customer easily;
- Share of all the knowledge possessed by the company;

4.4. SWOT Analysis of the Enterprise

In order to establish the company's strategy it is necessary to combine the internal and the external analysis made on the company. To do that, it is performed a SWOT analysis. A SWOT analysis is composed by the combination of the strengths, weaknesses, opportunities and threats. The combination of these internal and external factors will result in different factors that affect the company's performance. The following analysis provides the combined analysis between the external and internal factors presented before.

Strengths and Opportunities:

- Knowing the market and knowing that there are few competitors gives the company the advantage to be known before any other company;

- The European Incentives to the recruitment of Human Resources will give the company the opportunity to hire more expertise workforce;
- The partnership with engineers present in the market gives the opportunity to the company to expand its wide range of offer.

Using Strengths to avoid Threats:

- Although having a low number of competitors, the company must take into account the emerging competition, that allied with the economic crisis can difficult the company's success;
- The unspecific and unsupportive laws allied with the underdevelopment of the renewable solutions require a up-to-date knowledge by the workforce;

Using Opportunities to overcome Weaknesses:

- Recurring to the European Incentives the company can upgrade the number of Human Resources fluently in more than one language so that the company can explore the foreign markets;
- Being the market always evolving there is a necessity for the company to upgrade the out-of-date technology in use and to expand its offices to reach more target customers and then develop more partnerships with expertise engineers;
- The share of all the knowledge possessed by the company might at one point be out-of-date, since the market is still being explored and always evolving.

Weaknesses and Threats:

- It may not be safe for the company to open offices throughout the country, once the economic Crisis is still having its effects and the company may find some difficulties in finding customers willing to invest in this market;
- The unspecific and unsupportive laws reduce the number of people interested in investing in the renewable energies. This may present a difficulty in what comes to opening offices throughout the country, once people see that the solutions presented by the renewable energies' products are not profitable enough;
- The low number of human resources may present a risk once the company tries to invest in a new foreign market. This fact together with the emerging competition, may present a risks in the internationalization process of the company

4.5. Critical Factors for Success

In the sector in which it operates, CRITICAL KINETICS is considered one of the most important market players. Because the renewable energies' market in Portugal is still yet to explore, the company has the advantage of being the first one to provide a full service on this field, training professionals and providing them with the necessary tools to operate in it. This way of working gives a large advantage to CK, being on a stage above all the other companies operating in this market.

Also, the values the company stands for represent a wide advantage above all the other companies, namely, and as mentioned before the innovation, because all the solutions presented by the company are developed to overcome the market expectations, and the programs developed by it. The company has skilled engineers that develop and are constantly improving computer programs to evaluate and adapt the budget given by the company to the customer's real needs.

In conclusion, the critical factors of the company can be summarized by: skilled workforce, constant innovation, experience in the field that the fact that it was the first player in this type of market.

4.6. Internationalization Strategy

The objectives and targets of the company were defined by Hugo Barbosa. The main objective of the company is being able to enter the Brazilian market with reduced costs and risks for it, having always in mind that the most important is the performance of the company and the acceptance in the Brazilian market. As to targets, the company did not impose any value for the financial investment, although it defends that the investment should be the lowest possible for the highest performance possible. Hugo Barbosa has also not defined a time limit, meaning this that, if there is a need for the company to make the investment in a higher time range, there will be no problem at all. The date of internationalizing the company has also not been defined, meaning this that the company has not yet decided if it's going to be internationalized in the next year or in the year after.

In this way, and taking into consideration all the demanding topics from Hugo Barbosa and all the data provided above, it is safe to defend that the best entry mode for CK Solar Academy should be a Joint Venture. It is known that this mode of entry is chosen with higher frequency between countries with higher cultural distance, nevertheless with a Joint Venture, the Brazilian counterpart, all the bureaucratic work, namely the legal representative and knowledge on Brazilian laws, can be dodged. More than this, the risks and the rewards would be shared. On the other hand, the firm might run the risk of losing the long-term revenues, by sharing the internal knowledge with a partner. The main obstacle to CK Solar Academy should be finding the right partner on the Brazilian market.

Because of the difficulty to find the right partner to form a Joint Venture, are presented bellow several possibilities for the company to consider.

The main partners to this internationalization project should be the private universities and the energy institutions. As to the private universities, the best-ranked ones are *Universidade Presbiteriana Mackenzie* (32°), and *Pontificia Universidade Católica de São Paulo* (53°)¹⁹. Both universities are located in *S. Paulo*. The choice of universities as potential partners comes with the fact that in this way, it is given to the engineers trained by the university the possibility to accommodate all the university knowledge with the market necessities. In this way, not only it would attract more students to the university, but also give the company the opportunity to form young students with fresh knowledge. The choice of private universities instead of public comes with the fact that is easier to form a partnership, once there is not required the approval of the Brazilian government.

The energy institutions to consider are Apine (Brazilian Association for Independent Electric Energy Producers) and ABSOLAR (Brazilian Association of PV that represents the interests of all companies involved with PV). The first association would be the perfect partner to enter the Brazilian market once it is directly in contact with the independent electric energy producers. This would give the company, the opportunity to start directly with the already established producers, give them the opportunity to gain more knowledge and an advantage in comparison to their competitors. This would give the agency the opportunity to collaborate with more energy producers, and once the agency works with the executive and legislative powers, maintain a more accurate list of all the energy producers. As to the second agency, that represents the interests of the member companies involved

¹⁹ In a total of 192 Universities. (Ranking Universitário Folha, 2016)

with the Photovoltaic market, would give the company's courses credibility and would attract more members to this association.²⁰

By the moment my collaboration with the company ended, it was being discussed the possibility to enter the Brazilian market through a company name *Taura*, a company that works with electrified fences. The reason that the company wanted a partnership with CK Solar Academy to gain the expertise to generate electricity through solar panels to its electrified fences. In this way, *Taura* would benefit with the knowledge and the proximity to the European market and CK Solar Academy would benefit with the entering in the Brazilian market.



Fig. 25 - Logo of Taura

(Source: <http://www.grupotaura.com/>)

The best way to CK Solar Academy enter Brazil should be a Joint Venture with a company like *Taura*. This company works in a completely different field and worries about being the best in that field. This means that, with a partnership with the Portuguese company, the firm would have the opportunity to train their employees, improving in this way the quality of the service offered. As a return, the firm would also have the opportunity to enter the European market, starting with the Portuguese one. For this, it must be considered that the Brazilian market is not a European market. This means that it is easier for a European firm to enter a European market than a non-European one. Inside the European Union, a firm has easier access to all the financial and legal information and funds that help the firm to succeed in this market. In Brazil, a firm has that information too, but it must be considered that not all the laws are written, and there are lots of bureaucratic work that must be done. Therefore, a firm that succeeds in entering in the Portuguese market can make its way through the European Union market.

²⁰ (Ondernemend, 2015)

5. Chapter V - Internship

My internship on the company started on the September 14th 2015 and ended in the June 14th 2016. The main objective of my internship was to help with the management and internationalization of the company. My work plan included activities from support in the organization of events in the renewable energy's area, managing the social networks, support in the applications of Portugal2020 among others²¹.

When I arrived to the company, the first activity I had to embrace was the research on the Portugal2020. It is widely known that the government and international agencies can profit with the internationalization and the development of the firms and the investment that comes with it. To promote the internationalization and the investment in the European Union, several grants and loans to help the firms were created, to develop and consequently generate investment, making the markets evolve. Portugal2020 is a partnership agreement between Portugal and the European Commission that puts together the five European Structural and Investment Funds: FEDER - European Fund of Regional Development; FSE – European Social Fund; FC – Cohesion Fund; FEADER – European Fund of Rural and Agrarian Development; and FEAMP – European Fund for Aquatic and Fisheries affairs. This program promotes the economic, social and territorial development in Portugal between 2014 and 2020, by providing Portugal 25 billion of euros until 2020.

Portugal 2020 acts at the national level and at the regional level. The regional level is divided in: North, Center, Lisbon, Alentejo, Algarve, Azores, and Madeira. The main objectives of these funds are: stimulating the production of tradable goods and services; increasing exports; transfer of the results from the system of scientific to the productive fabric; completion of compulsory schooling (18 years old); reduction of school abandonment; integration of people at risk of poverty and combating social exclusion; promoting sustainable development, with a view to the efficient use of resources; strengthening territorial cohesion, particularly in cities and low density areas; and rationalization, modernization and qualification of the buildings of public administration²². In total, during my time in the company, I have made three applications to different programs under Portugal2020.

²¹ See Appendix 1 – Protocolo Relativo à Realização de Estágio de Natureza Profissional no âmbito de um ciclo de estudos conducente ao grau de mestre.

²² (Republica Portuguesa, 2015)

After my research on Portugal2020, which took me two weeks, I was involved with the organization of a congress in the photovoltaic area – *CNAF: Congresso Nacional de Autoconsumo Fotovoltaico*. With the help of my colleague Eng. Rui Santos, I had to manage the registrations and make sure that the payments entered the firm’s bank account. I also had to coordinate tasks and organize the staff for that day. This congress took place on October 10th, and assembled a total of 30 guest speakers during 12 hours. About 200 professionals attended the congress. During this congress, my main task was to welcome the guests and present them with all the information they needed. My other tasks included making sure that there was nothing missing nor out of place and organize the coffee-break tables. After the congress, I had to make a financial report on the event, and an article about it that was published in a magazine of the area²³.

After the event, I had the opportunity to develop other tasks aside from my work plan. These tasks consisted in establishing contacts with clients and suppliers and managing the financial department of the company. At the same time, I was developing an application to Portugal2020 and coordinating the courses given by the company in the renewable energies’ market. In December 2015, I had to develop a financial report related with the company’s yearly transactions²⁴.

After the New Year, I was in charge of the main emails of the company and had to forward them to the right person to handle them. This task arose from the necessity to control all the work that arrived to the company, so that no customer would end up without a proper answer.

I also had to collaborate with my colleagues on the organization of *AGROTECNOLÓGICA – Soluções Tecnológicas para a Agroindústria*. The *AGROTECNOLÓGICA* was another congress organized by the company, but this time in the agro-technological area. It had as its main objective to gather, in the same room, professionals and engineers from this area of business. To this event, I was in charge of guiding my colleagues through all the process, namely helping them with the registrations of the participants, the payments, and all the logistics associated with it. This task was given to me by Engineer Hugo Barbosa, who thought that I had enough experience gained in the

²³ Renováveis Magazine. This article can also be found in the webpage of CK Solar Academy (<http://www.cksolaracademy.com/resumo.html>).

²⁴ Due to having confidential information, that report could not be attached to this work.

previous congress to guide them. At the end of this congress, I had to develop a financial report and another article to be published online²⁵.

During my time at the company, I had to manage the presence of the company on the social networks, namely on Facebook, LinkedIn and on Google+. This task demanded a constant surveillance of the website views' statistics, and deciding on what should be done to attract more customers. To help me with these tasks, Hugo Barbosa gave me the opportunity to assist a webinar (which is an online seminar) related to the social networking topic.

In terms of international communication, during my time at the company, I had the opportunity to establish some relationships with some firms from Brazil. The most important one was *Taura*, which is a company that works with electrical fences. This company is looking for a partner in the Photovoltaic area from Portugal to be able to expand first to Europe and then worldwide. The fact that this company has already established itself in the Brazilian market brings a great opportunity to CRITICAL KINETICS, once it can enter the market with the safe knowledge given by its partner. At the time I left the company, the decision to collaborate with this company was still being discussed.

Most of the tasks I developed in the company were related with CK Solar Academy, once it is the component of the company that is going to enter the Brazilian market. Hugo Barbosa gave me the opportunity to manage this section all by myself, so I could follow my instincts and gain some experience in the area. Naturally, all the decisions and suggestions I made were firstly evaluated and discussed with him. Hugo Barbosa would meet with me every Monday afternoon so that I could present him my suggestions and justify them. I can say that this work method gave me the opportunity to evolve not only as a person but also by gaining experience, defending my ideas and learning how the market operates in this particular area.

I was responsible for the management of the courses given by this component of the company. Until now, the company lectures courses in Lisbon, Coimbra and Porto, and is studying the hypothesis of opening classes in Faro. Related to the management of these courses, I was responsible for the registration of the students, the organization of the classes and the finances. At the end of each course, I scheduled the date for final exam and organized all the documents and essential information to the elaboration of technical and pedagogical

²⁵ <http://agrotecnologica.pt/index.php/congresso.html>

dossiers. Within this topic, my responsibilities also included the development of brochures and presentation billboards, which gave me the opportunity to learn how to work with Photoshop and Microsoft Publisher²⁶. These brochures and presentation billboards were then published in the social networks of the company and in websites of the area.

²⁶ The billboards can be found in appendix 2

6. Chapter VI – Conclusion

6.1. Conclusions and Future Research

The present study has as its main purpose the study on the possibility to increase the number of markets in which CK Solar Academy operates, aiming for markets that lack in training courses as wide and complete as those offered by the company in study.

After careful examination on the data provided, it is possible to conclude that the Brazilian market is open to receive a company in the renewable energies' sector, and even more open for a company that will transmit the knowledge it has on the renewable energies technology. The transmission of knowledge is seen has a precious asset, and the fact that a company that works in the renewable energies is willing to transmit that knowledge, gives CK Solar Academy the advantage it needs to succeed.

The recommendations presented in this work meet the Network Theory, defending that the creation of a relationship between the entrepreneur and the host market will favor not only the presence of the company in the host market but also allow the creation of bridges between it and the home country of the company. This theory will guide the company into the creation of a Joint Venture with a possible partner in the Brazilian market, creating bridges between the two countries, bringing benefits to the Portuguese company in the Brazilian marketing, and smoothing the entering of the Brazilian company in the Portuguese market, and therefore the European market.

Future research may include a more wide study, comprising several companies of the same business areas. It is important to consider, and it was one of the main obstacles to the development of the present report, the presence of some contacts in the Brazilian market. This is justified by the necessity of confirming the information found, once that the country is known for being unstable, and the information provided may not be up-to-date.

The present study is considered an action-research based in a single case-study, which main objective was to apply the knowledge acquired during the master in International Business to benefit CRITICAL KINETICS, Unip. Lda. This prevents the generalization of conclusions, once the work developed reflects the specific characteristics of the company and the sector in which it is inserted.

The time spend at the company was really intense and fulfilling, in which I had the opportunity to work in several different areas, and develop several tasks some of which not directly related with my area of studies. Unfortunately the internationalization plan was not implemented during the time I spend in the company.

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8. Appendices

8.1. Internship Protocol

Anexo I


PLANO DE TRABALHO

Nome do estudante: Juliana Filipa Pereira Mendes **Nº estudante:** 2140092 **Curso:** Master in International Business
Supervisor da Escola: Ana Lúcia Mario Sargento **Departamento:** Gestão e Economia
Supervisor da Emp./Inst.: Hugo Maganão **Departamento:** Gerência

Designação do estágio: Apoio à Gestão e internacionalização na Critical Kinetics.

Objetivos a atingir:
 Promover a aproximação dos estudantes ao mercado de trabalho;
 Aplicar conhecimentos e competências adquiridas na área dos negócios internacionais;
 Desenvolver competências transversais essenciais para a empregabilidade dos estudantes

ATIVIDADES	Setembro	Outubro	Novembro	Dezembro	Janeiro	Fevereiro	Março	Abril	Maior	Junho
Apoio à organização de eventos na área das energias renováveis	X	X			X	X	X	X	X	X
Gestão da presença nas redes sociais			X	X	X	X	X	X	X	X
Reorganização dos meios de comunicação externa		X	X	X	X	X	X	X	X	X
Recolha e sistematização de informação sobre o enquadramento fiscal nos países de destino		X	X	X	X	X	X	X	X	X
Apoio na elaboração do dossier técnico-pedagógico		X	X	X	X	X	X	X	X	X
Recolha e sistematização de informação sobre potenciais novos mercados de internacionalização			X	X	X	X	X	X	X	X
Apoio na instrução de candidaturas ao Portugal 2020 na área de internacionalização e qualificação de PME			X	X	X	X	X	X	X	X

Data: 14-09-2015

IPL

Pedro Manuel G. Antunes
Pedro Manuel Gonçalves Martins
Diretor do ESTG

(em conformidade com o artigo do despacho na alínea g) do nº 10, Despacho nº 1283/2014, publicado em Diário da República nº 161, 2ª Série de 19 de outubro)

Entidade de Acolhimento

CRITICAL KINETICS, UNIPESSOAL, LDA.
 NIF: 509 900 518
 www.critical-kinetics.com | info@critical-kinetics.com
 Tlm.: (00351) 918 451 347 - Apartado 40018
 1514-001 LISBOA - PORTUGAL

A Gerência

Hugo Maganão

Entidade de Acolhimento

Estudante

Juliana Filipa Pereira Mendes

Fig. 26 - Work Plan

(Source: authors' files)

8.2. Billboard of the Courses

AUTOCONSUMO FOTOVOLTAICO
Curso em regime intensivo

CK Solar Academy

- Visão geral da tecnologia
- Enquadramento legal e incentivos
- Projeto de sistemas em função dos consumos
- Modelação 3D em SketchUp® e Simulação em PVsyst®
- Análise Financeira com Excel®
- Elaboração de propostas

Novas datas!

	12ª Edição	13ª Edição	14ª Edição
LISBOA	16-20 Maio 2016	4-8 Julho 2016	5-9 Setembro 2016
PORTO	30-3 Junho 2016	18-22 Julho 2016	19-23 Setembro 2016

	3ª Edição	4ª Edição
COIMBRA	13-17 Junho 2016	26-30 Setembro 2016

Segunda a Sexta das 9:00 às 18:30
Aulas de Laboratório em data a designar.

Programa detalhado do curso em www.CKsolarACADEMY.com

Com o apoio de:

Infocontrol Grupo, Solar-Log, DEGER, Extrusal pro solar, CRITICAL KINETICS ENERGY CONSULTANTS, Ahptus, SCHLETTER, Weidmüller, Mprime, ABB, INVOLAR, ISA Energy, LORENTZ Sun, Water, Life, as solar, polysun, renováveis magazine, EDIFICIO E ENERGIA, IBC SOLAR, KOSTAL SOLAR ELECTRIC.

PARA MAIS INFORMAÇÕES: COORDENAÇÃO TÉCNICA

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www.CRITICAL-KINETICS.pt

CERTIFICAÇÃO: ENTIDADE FORMADORA CERTIFICADA

Fig. 27 - Curso Intensivo em Autoconsumo Fotovoltaico

(Source: company's files)

8.3. CNAF 2015 Billboard

Autoconsumo Fotovoltaico
Congresso Nacional 2015
A Revolução Energética!

10 de Outubro
Torres Novas
NERSANT
ASSOCIAÇÃO EMPRESARIAL

CK Solar Academy

Antes de cada Coffee Break haverá espaço para um debate (15 Min)

7:45		- Receção dos participantes
8:15	CRITICAL KINETICS	- Sessão de Abertura
8:30	LNEG	- Autoconsumo em Portugal, na Europa e no Mundo Dr. António Joyce
8:45	RdA	- Múltiplos benefícios do Autoconsumo Eng. Jorge Rodrigues de Almeida
9:00	energia técnica	- O Impacto do Autoconsumo na Simulação Dinâmica de Edifícios Eng. Rui Faria
9:15	Direcção Geral de Energia e Geologia	- Desafios na integração das UPAC e UPP com as instalações existentes Eng. Filipe Gabriel Pinto
9:30	VIVAPOWER	- Grow With Energy: Apoio à Eficiência Energética e à Produção de Energia Eng. João de Jesus Ferreira
10:00		- Coffee Break Panel 1 - Autoconsumo e Eficiência Energética
10:15	S'mples	- Mercado Liberalizado e Autoconsumo Fotovoltaico Eng. Manuel Azevedo
10:30	APES Energia	- Partilha de risco e compromisso com o desempenho dos sistemas Eng. Jorge Borges de Araújo
10:45	ISA Energy	- Municípios e Cidades Inteligentes Eng. José Bastião
11:00	Médio Tejo 21	- Projecto Plataforma Tejo Eng. Mónica Martins
11:15	Coopémico	- Associativismo Energético e Responsabilidade Social Eng. Nuno Brito Jorge
11:45		- Coffee Break Panel 2 - Contratos ESCO e PPA
12:00	CIRCUTOR	- Autoconsumo e Carregamento de Veículos Eléctricos Eng. Pere Soria
12:15	QKSOL	- Autoconsumo com acumulação otimizada Eng. Xavier Tomás
12:30	Infocontrol	- Soluções activas para protecção de instalações eléctricas Eng. Nuno Silva
12:45	MARTIFER SOLAR	- Telegestão de Parques Fotovoltaicos / Solar Industry Awards 2015 Eng. Marco Alves
13:00	Weidmüller	- Monitorização PV string a string Eng. David Pereira
13:30		- Almoço Livre Panel 3 - Diagnóstico, Operação e Manutenção
15:00	CK Solar Academy	- Desafios técnicos no dimensionamento de sistemas de autoconsumo Eng. Rui Santos
15:15	SOLAR	- Soluções Tecnológicas para Autoconsumo com Acumulação Sebastian Senwald
15:30	Energys	- Desafios tecnológicos para sistemas de acumulação eletroquímica Carlos Marques
15:45	NEMOTEK	- Soluções de armazenamento CellCube, Power Driver e CleanSource UPS Eng. José Frade
16:00	Schneider Electric	- Correção do Factor de Potência em Sistemas de Autoconsumo Eng. Ana Paula Santos
16:30		- Coffee Break Panel 4 - Autoconsumo Instantâneo e com Acumulação
16:45	white	- A experiência acumulada com o QREN Eng. Carina Ramos
17:00	Risa	- Novas oportunidades com o Portugal 2020 Dr. Pedro Nunes
17:15	CA Crédito Agrícola	- Soluções de Financiamento Dr. João Cruz
17:30	creogest	- Oportunidades de financiamento no âmbito do PDR 2020 Eng. João Coimbra
17:45	anpromis	- Energias Renováveis Vs Sazonalidade da actividade agrícola Eng. Vasco Faustino
18:15		- Coffee Break Panel 5 - Incentivos no Novo Quadro Comunitário
18:30	enforce	- Caso de estudo: O Autoconsumo mesmo antes do DL 153/2014 Eng. Ricardo Leite
18:45	galp energia	- Caso de estudo: Projecto Universidade Verde 644kW Eng. Francisco Dias
19:00	EnergyTop	- Caso de estudo: UPAC com acumulação Eng. Francisco Dias
19:15	SOTECNISOL	- Caso de estudo: UPAC no sector Agroindustrial Eng. Filipe Inácio Morais
19:30	Renováveis	- Caso de estudo: Instalação de UPAC via Concurso Público Eng. Filipe Inácio Morais
20:30		- Sessão de Encerramento Panel 6 - Casos de Sucesso

Parceiros: DEBER, INVOLAR, Solar-Log, LORENTZ, Weidmüller, SCHLETTER, Sun Water-Life, polysun, ABB, Extrusal, IBC SOLAR, ISA Energy, renováveis magazine

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Fig. 28 - Congresso Nacional de Autoconsumo Fotovoltaico 2015

(Source: company's files)

8.4. AGROTECNOLÓGICA 2016 Billboard

Congresso Nacional de Tecnologia no Sector Agroindustrial

AGROTECNOLÓGICA 2016

A Revolução Tecnológica já é uma Realidade!

14 de Maio
Escola Superior
Agrária
[PSantarém]

7:45	- Recepção dos participantes
8:15	- Sessão de Abertura
8:30	AGRO-CK - Autoconsumo fotovoltaico e eficiência energética
8:45	S'mples energia - O caminho para a poupança e eficiência energética
9:00	Jayme da Costa - Estufas fotovoltaicas: solução de eficiência e rentabilidade
9:15	LORENTZ - Smart PSU e acesso remoto a bombas solares de grande porte
9:30	ccenergia - Agro-industria + eficiente
10:00	- Coffee Break Painel 1 - Soluções de bombagem solar e produção energética
10:15	wisecrop - Sistemas de apoio à tomada de decisão como fator de produtividade
10:30	MY FARM.COM - MyFarm: "Farmville" do mundo real
10:45	TERRA PRO - Agricultura e inovação com tecnologia de ponta
11:00	MAGOS Irrigation Systems - Tecnologia aplicada aos sistemas de fertirrega
11:15	IRRICAMPO - Sistema VRI: eficiência na aplicação da água
11:45	- Coffee Break Painel 2 - Fertirrega e automatização de explorações
12:00	NEW HOLLAND AGRICULTURE - Veículos autónomos assistidos por GPS
12:15	AGRO INSIDER - Sensores próximos e remotos na otimização e sustentabilidade agrícola
12:30	AGRODRONE - Controlo de culturas via drone
12:45	JOHN DEERE - Tecnologias de suporte à agricultura de precisão
13:00	400 Agricultura de Precisão - Detecção remota como apoio à gestão das grandes culturas
13:30	- Almoço Livre Painel 3 - Monitorização via satélite, drones e GPS
14:45	- Retoma da sessão pelo Ministério da Agricultura, Florestas e Desenvolvimento Rural *
15:00	LITORALREGAS - Sistemas inovadores em culturas hidropónicas: tecnologia VTR
15:15	MONTA TORRE - Caso de Estudo: Forragem verde hidropónica
15:30	CoolFarm - Sistemas de apoio ao controlo de explorações em estufas
15:45	CHATRON - Humidificação, ventilação e arrefecimento industrial - Biocoller
16:00	meserecool - Micronebulização e arrefecimento evaporativo em estufas
16:30	- Coffee Break Painel 4 - Culturas hidropónicas, gestão centralizada de estufas e climatização
16:45	Agrobótica - Agricultura de precisão como solução para intensificação sustentável
17:00	ajap - Jovens agricultores e as novas tecnologias
17:15	Centro Operativo de Tecnologia de Rega - Desempenho de sistemas de rega e bombagem na otimização de recursos
17:30	Atekeia Solutions - VINBOT: Ferramenta auxiliar à viticultura de precisão
17:45	V.P.S. WGuard - Co-financiamento de soluções para eficiência energética
18:15	- Coffee Break Painel 5 - Instituições e projectos
18:30	BLACK.BLOCK - Prémio EDP inovação: Secador solar
18:45	desidrataia - Desidratação de frutas e legumes
19:00	aromas BOLETOS - Desidratação de cogumelos
19:15	quality plant - Produção de plantas micropropagadas
19:30	TO GREEN Grow - Fábricas de plantas: agricultura em ambiente controlado
20:30	- Encerramento Painel 6 - Fábrica de plantas, desidratadores e secadores solares

Antes de cada Coffee Break, haverá tempo para um debate (15 Min). Em paralelo com este evento decorrerá a AGRO B2B, reuniões bilaterais entre profissionais do sector.



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* Sujeito a confirmação

Fig. 29 - AGROTECNOLÓGICA 2016

(Source: company's files)