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FEP FACULDADE DE ECONOMIA
UNIVERSIDADE DO PORTO

High value-added and knowledge-intensive investments by foreign multinationals in Portugal

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Dissertation

Master in International Business

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Acknowledgements

I wish to express my sincere gratitude and appreciation to my supervisor, Ana Lehmann, whose guidance and knowledge were crucial and invaluable for the fulfilment of this milestone.

Additionally, I would like to express my gratitude to my team at PSA, especially to my supervisor Silvia, for not only being understanding but also extremely supportive in my decision to take on this master's degree.

To my friends, in particular Ana Rita, Ju, Guida, Ni, Nenas, Pêras e Ana. Our daily talks made me sane and motivated. I'm constantly inspired and learn from each one of you everyday.

To Rita, my partner in this journey, thank you for your endless help, encouragement, for seeing through our differences and accepting me as I am. I can't imagine what my university years would have been like without your company.

To Pedro, thank you for all the support, love and for being my safe and happy place. I can only hope that half of your determination, ambition and work ethic rubs off on me, and that I make you as proud of me as I am of you.

To my family, especially my parents, thank you for your constant support and guidance, for always believing in me and giving me the freedom to make my own choices. And to my cousin, Ana Rita, for always being by my side, motivating and supporting me.

Lastly, I would like to dedicate this piece of work to my grandmother. Normally, I don't believe that you are watching over me but right now I wish you were. I hope I make you proud.

Abstract

The existing literature has shown a positive relationship between high value added and knowledge-intensive foreign direct investments and innovation and economic growth. Thus, the capability to attract this type of investments is a desirable characteristic for a country and one of governments' priorities.

In recent years, Portugal has attracted a growing number of high value added and knowledge-intensive investments, resulting in a paradigm shift in what concerns the type of investments that the country usually attracts. Thus, this study aims to understand why Portugal presents itself as an attractive destination for these foreign investors, what are the characteristics of these Portuguese subsidiaries and to what extent does their existence impact the MNC. Based on the review of relevant theoretical frameworks, which were later compared to the results of interviews carried out with representatives of Portuguese subsidiaries, results indicate that the quality of human capital, along with the country's socio-cultural conditions play an important role in the attraction of high value added and knowledge-intensive FDI. In addition, we find that these Portuguese companies are important sources of knowledge for the MNC, contributing for the increase of its competencies.

Keywords: Foreign direct investment, FDI, Portugal, high value added, knowledge intensive, human capital

Resumo

A literatura existente denota uma relação positiva entre investimento direto estrangeiro de alto valor acrescentado e intensivo em conhecimento, e inovação e crescimento económico. Assim, a capacidade de atrair este tipo de investimento é uma característica desejável para os países e uma das prioridades dos governos.

Nos anos mais recentes, tem-se observado em Portugal um número crescente de investimentos de alto valor acrescentado e intensivos em conhecimento, resultando numa mudança de paradigma no que diz respeito ao tipo de investimentos que o país atrai. Neste sentido, este estudo propõe-se compreender os motivos porque Portugal se apresenta como um destino atrativo para estes investidores estrangeiros, quais são as características destas subsidiárias portuguesas e de que forma a sua existência impacta a atividade da multinacional. Com base na revisão da literatura relevante, que mais tarde foi comparada com os resultados das entrevistas realizadas com os representantes das subsidiárias em Portugal, os resultados indicam que a qualidade do capital humano, assim como as condições socio-culturais do país, desempenham um papel fundamental na atração de IDE de alto valor acrescentado e intensivo em conhecimento. Para além disso, é possível concluir que as subsidiárias portuguesas são fontes importantes de conhecimento para a multinacional, contribuindo para o aumento das competências desta.

Palavras-chave: Investimento direto estrangeiro, IDE, Portugal, alto valor acrescentado, conhecimento, capital humano

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List of Acronyms

AICEP	Agência para o Investimento e Comércio de Portugal
FDI	Foreign Direct Investment
EY	Earnst & Young Global Limited
IFDI	Inward Foreign Direct Investment
MNC	Multinational Company
MNE	Multinational Enterprise
OECD	Organisation for Economic Co-operation and Development
OLI	Ownership, Location and Internalization
UNCTAD	United Nations Conference of Trade and Development

1. Introduction

1.1. Motivation, Relevance of the Theme and Research Question

Foreign direct investment (FDI) is considered one of the most important engines of globalization, as well as an important driver for economic growth, innovation and technological development (Azarhoushang, Masoumy and Wu, 2015; Baharumshah and Almasaied. 2009; OECD, 2008; UNCTAD, 2005; Mencinger, 2003; Borensztein, Gregorio and Lee, 1998). In particular, FDI from high-tech and knowledge intensive companies is considered especially important, given the positive impact anticipated in key economic variables. For instance, such investments can offer an important contribution to host countries in the area of technology transfer (Kowalski, Rabaioli and Vallejo, 2017; Ghebrihiwet and Motchenkova, 2017; Byun and Wang, 1995), which is a key driver of economic development and innovation (Santacreu-Vasut and Teshima, 2016; Weiguo and Kangfeng, 2002). High value-added and knowledge intensive FDI can also have a positive impact on management know-how, labor productivity (Azarhoushang et al., 2015), and generate high quality employment with high wages (Nelson and Stephens, 2012). These operations are characterized by developing high value added and sophisticated activities - like, among many other examples, software development, development of digital platforms and digital infrastructure, artificial intelligence and machine learning based activities (Gelübcke, 2013) relying on very qualified human capital and employing typically human resources with at least an university degree (Fukugawa, 2013; Slaughter, 2002). Human capital and talent are, therefore, determinant factors for the innovative and economic performance of such companies (Khan, Hussain, Shahbaz, Yang and Jiao, 2020; Park, 2018; Frank and Obloj, 2013; Santarelli and Tran, 2013; Unger, Rauch, Frese and Rosenbusch, 2011), characterized by high levels of knowledge intensity (Bosma , Praag, Thurik and Wit, 2004).

According to the EY Attractiveness Survey Portugal 2019 (EY, 2019), investment in R&D activities in Portugal is booming, suggesting a rising interest in higher value added activities and a decisive change in the style of operations and type of subsidiaries that Portugal can attract. In 2018 alone, the country has received 16 investments from high tech and knowledge based companies (one out of five FDI projects in Portugal were of this type), seeking local talent and employing highly qualified people (EY, 2019, p. 11).

These investments come from companies such as Siemens, Daimler, Google, Natixis and Vestas, among others that established tech hubs in Portugal.

Underlying the reasons cited by these companies to justify their choice of location is that they consider Portugal to be "the hotspot for digital nomads and young and talented people in the field of technology, and the commitment of the local universities to training in data science, artificial intelligence (AI) and machine learning" (EY, 2019, p. 18).

Despite the demonstrated evidence regarding a clear shift in the type of foreign multinationals (MNCs)' activities attracted, to the best of our knowledge the subject of this recent pattern and wave of investments in Portugal has not yet been tackled by the existing literature. In this context, this dissertation aims to conduct a comprehensive analysis of the conditions and resources granted by the country, which enable international high-tech and knowledge intensive companies to perceive it as an attractive host economy for their investments, as well as of the type of strategic roles these subsidiaries fulfil, their relationship with headquarters and their characteristics.

Thus, the research question this dissertation will explore is "Which were the recent high tech and knowledge intensive investments by foreign multinationals in Portugal, and what are the characteristics and strategic roles of such subsidiaries?".

1.2. Main objectives and Structure of the Dissertation

The dissertation has, therefore, two main objectives:

1) First, to review the extant literature on the topic;

2) After, to analyse the case of Portugal in particular, with reference to the stated research question.

The first part of the research will consist of a meticulous and detailed review of the existing academic literature, based on the search for relevant key words (e.g. foreign direct investment; technological companies; high-tech) in reputed bibliographic databases, such as Scopus and Web of Science. This literature review will also identify and explore the most relevant theoretical frameworks underpinning this research, which will serve as the conceptual background for the second part of the dissertation.

The second part of the dissertation will focus on an empirical study of high value added and knowledge intensive foreign investors in Portugal. This empirical study will be based on structured interviews with representatives from high value added and knowledge intensive Portuguese subsidiaries. Such interviews will rely on a purposefully developed questionnaire, following extant literature and advice and validation by several experts (academics and practitioners) in the area.

Due to the current pandemic context, these interviews will be carried out through online platforms and obtaining positive responses to the interview requests will be undoubtedly the main challenge for this research.

2. Literature Review

This chapter will focus on the analysis of the most relevant literature about the phenomenon identified in the research question. It will start with the presentation and clear definition of the key concepts regarding the theme under analysis, followed by a critical review of pertinent theoretical frameworks, notably, FDI motivations, OLI/Ecletic paradigm, resource and knowledge based views of the firm and subsidiary roles/strategies.

2.1. Key concepts

This section aims to define the key concepts underpinning this dissertation, notably Foreign Direct Investment, Multinational Company, Multtinational Enterprise, Subsidiary, Knowledge Intensive Investment, Human Capital and Host Country.

2.1.1. Foreign Direct Investment (FDI)

The OECD (2008, p. 234) defines Foreign Direct Investment as "a category of investment that reflects the objective of establishing a lasting interest by a resident enterprise in one economy (direct investor) in an enterprise (direct investment enterprise) that is resident in an economy other than that of the direct investor. The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the enterprise".

2.1.2. Multinational Company (MNC)

Dunning (1993, p.3) defines Multinational Company as "an enterprise that engages in foreign direct investment (FDI) and owns or, in some way, controls value-added activities in more than one country". Hence, MNCs have two fundamental characteristics: they have the skills to organize and coordinate various value-added activities behind national borders; and they internalize cross-border markets for the intermediate products that result from those activities (Dunning, 1993). They are not necessarily very large and very established companies (i.e., a SME or a startup that owns/controls value-adding activities with a lasting interest in at least one country besides the country of origin qualifies as a MNC).

2.1.3. Subsidiary

A (foreign) subsidiary consists of an operational unit controlled by the MNC but located in foreign territory (Birkinshaw, 1997). More specifically, "a subsidiary is an incorporated enterprise in the host country in which another entity directly owns more than half of the shareholder's voting power, and has the right to appoint or remove a majority of the members of the administrative, management or supervisory body" (UNCTAD, 2007, p. 245).

2.1.4. Knowledge intensive investment

A knowledge intensive investment is performed by a company involved in R&D activities, which implies the improvement of routines and processes in which innovation is assimilated and firms' stock of knowledge is increased (Amoroso and Müller, 2018; Sánchez-Sellero, Rosell-Martínez and GarciaVázquez, 2013), improving its absorptive capacity (Sánchez-Sellero et al., 2013; Castellani and Zanfei, 2003; Mowery, Oxley and Silverman, 1996). Thus, R&D efforts are related to the deployment of a set of well-organized processes of knowledge creation, production, diffusion and application, contributing to innovation (Wang, 2010).

2.1.5. Human capital

Becker (1964) defines human capital as the knowledge, information, ideas and skills of individuals, suggesting that this form of capital is the most important in modern economies, since the economic successes of individuals and of whole economies, depend on how extensively and effectively people invest in themselves. In this context, the knowledge and skills that individuals bring to an organization can be acquired and developed through both education and professional experience or skill (Dimov and Sheperd, 2005), contributing to both the explicit and tacit knowledge of the firm (Konara and Wei, 2019; Munjal and Kundu, 2017; Teixeira and Tavares, 2014).

2.1.6. Host country

According to Wan (2010), a country is considered a host when it receives in its territory direct investment projects. This dissertation will, thus, focus on Portugal as host to Foreign Direct Investment.

2.2. Review of relevant theoretical approaches and related literature pertinent to the dissertation

This section will focus on the identification and exploration of the most relevant theoretical frameworks regarding the theme of this dissertation, which will be subsequently complemented by the review of related literature.

2.2.1 FDI motivations

The literature on motivations underlying FDI (Dunning, 1993) contributes to a realistic understanding regarding the heterogeneity of motivations from project to project. The work of Dunning (1993), in particular, represents one of the most relevant frameworks on FDI motivations, identifying four main reasons that explain why companies engage in FDI: resource seeking, market seeking, efficiency seeking and strategic asset seeking.

In what concerns resource seeking, a company invests in a foreign company with the goal of acquiring specific resources at a lower price in comparison with its home country (Dunning, 1993). Market seeking, on the other hand, can motivate FDI for four reasons: first, to supply specific markets or markets adjacent to those; second, due to the frequent need for product adaptation to local preferences and needs; third, if the production and investment transaction costs are lower than supplying the market from a distance; and fourth because of the need that the MNC may feel of having a physical presence in strategic markets supplied by its competitors (Dunning, 1993). Efficiency seeking, in turn, is related to the motivation to rationalize the organizational structure of the MNC in a way that allows it to benefit from the organization of geographically dispersed activities (Dunning, 1993). Lastly, the motivation underlying strategic asset seeking is orientated for the increasing of the company's global portfolio of physic assets and human skills, and normally happens with the acquisition of assets from foreign companies with the intension of promoting its strategic goals (Dunning, 1993).

The strategic asset-seeking motivation is the most relevant in the context of high-tech and knowledge intensive FDI, which is highly dependent on human capital and skills and is characterized by the desire to tap into skilled staff – like technicians and engineers - and to collaborate with advanced knowledge sources to augment their existing capabilities and acquire new ones (Elia and Santangelo, 2017). In this sense, this kind of FDI motivation is related to the idea that the superiority of the differentiated MNC networks is due to the innovative capacity of those networks (Mi, Yue, Shao, Kang and Liu, 2020; Sutherland, Anderson and Hu, 2020; Bartlett and Ghoshal, 1989) and, therefore, investing companies search for access to knowledge, skills, technology and local innovation (Gao, Li and Huang, 2019; Dunning, 1993). Thus, research institutions, suppliers, clients or competitors can be important sources of technological knowledge (Ferdows, 1989) and the characteristics of the chosen countries for investment should, consequently, include considerable levels of innovation, demand sophistication, existence of related industries, industries that support de MNC's activity and presence of innovation clusters in the relevant industry (Dunning, 1993).

This demand for innovation implies the support by both public and private sectors. The investment in R&D and innovation is particularly important, especially by private institutions producing high-quality scientific research, as well as the collaboration with universities in research and in the protection of intellectual property (World Economic Forum, 2013).

2.2.2 Internalization theory

Internalization theory, developed by Buckley and Casson (1976), Rugman (1981) and Hennart (1982) presents itself as another theoretical explanation for FDI. More precisely, it "is a firm-level theory explaining why the MNE will exert proprietary control (ownership) over an intangible, knowledge based, firm-specific advantage" (Rugman, 2010, p.3).

In this context, when internalization advantages overcome the externality of knowledge as a public good, FDI is preferred to licensing, joint ventures, or alliances (in all of the last three modalities, there is a risk of dissipation of the firm's knowledge advantage) (Rugman, 2010). In other words, this theory represents a shift to the dynamic innovatory capability of internal markets and the notion that FDI was the firm's internal substitute for the external diffusion of knowledge (inhibited by the market imperfections for knowledge and the problem of buyer uncertainty (Buckley, 2016 ; Buckley & Casson, 1976).

In this sense, this theory provides fundamental contributions in explaining knowledge intensive FDI. Knowledge and technology tacitness have great impact on a firm's propensity to invest in foreign markets (Martin and Salomon, 2003). When the MNC has an intangible, knowledge based firm specific advantage and needs to prevent its dissipation in foreign markets through the use of an internal market (Rugman 1981), FDI is preferable to licensing or joint ventures. Empirical research on knowledge generation and innovation within the MNC also broadly supports this thinking (Cantwell and Narula, 2001; Dunning 1998). Rugman and Verbeke (2001) specifically proposed what they consider a refinement to internalization theory, by admitting the potential of firm specific advantages being developed in subsidiaries, moving away "from the unidirectional version of FSA creation and diffusion (from parent to subsidiaries) to one more in line with the observed workings of MNCs (subsidiary to parent, or intra-subsidiary diffusion, among one of numerous FSA diffusion patterns)" (Sutherland, Anderson and Hu, 2020, p. 2).

2.2.3. OLI/Eclectic Paradigm

In addition to his contribution regarding the main motivations underpinning FDI, Dunning (1977) is also the author of one of the dominant paradigms in international business studies: the Eclectic Paradigm or OLI Paradigm, whose goal is to explain the origin, level, pattern and growth of MNCs' offshore activities (Eden and Dai, 2010).

Dunning (2000) affirms that for FDI to occur there are three types of advantages that must be simultaneously present: ownership (O), localization (L) and internalization (I).

Ownership advantages are those related to the access or ownership of assets that increase the MNC's capacity to generate wealth, such as technology, organizational skills and management experience, and are often intangible, offering the firm a competitive advantage (Dunning, 2000). In this context, the extant literature identifies three main kinds of firm specific competitive advantages: those relating to the possession and exploitation of monopoly power, those concerning the possession of a bundle of scarce, unique and sustainable resources and capabilities and "those relating to the competencies of the managers of firms to identify, evaluate and harness resources and capabilities from throughout the world, and to coordinate these with the existing resources and capabilities under their jurisdiction in a way which best advances the long term interests of the firm" (Dunning, 2000, p.168).

On the other hand, Dunning (2000) introduces the concept of location advantages, which is a relative construct comparing the conditions of the home and the host country. Thus, the author defines these advantages as conditions offered by other countries, such as abundance of natural resources and labor, market dimension and political and economic benefits, which consist of comparative advantages in relation to the home country. (Dunning, 2000).

Lastly, the sub-paradigm concerning internalization advantages offers a framework for the evaluation of the different ways "in which firms may organize the creation and exploitation of their core competencies, given the locational attractions of different countries or regions" (Dunning, 2000, p.164). Such modalities vary from buying and selling goods and services in the open market, through a variety of inter-firm non-equity agreements, to the integration of intermediate product markets, or the purchase of a foreign company. In this sense, the OLI paradigm defends that the greater the net benefits of internalizing cross border intermediate product markets, the more likely a firm will prefer to engage in foreign production itself (Dunning, 2000).

In the context of knowledge-intensive investments, each of the three advantages assumes a specific importance. In what concerns O specific advantages the emphasis is more on their capabilities to access and organize knowledge intensive assets from throughout the world; and to integrate these, not only with their existing competitive advantages, but with those of other firms engaging in complementary value added activities. O advantages are, therefore, connected with resource and strategic-asset seeking FDI, which are characteristic of knowledge-intensive investments (Dunning, 2000).

Location advantages also assume a significant importance in the context of knowledge-intensive investments, since the spatial concentration and clustering of some kinds of economic activity affect the extent, geography and timing of FDI (Dunning, 2000; Froot and Stein, 1991). In other words, an "optimum locational portfolio of assets is a competitive advantage in its own right" (Dunning, 2000, p. 174). The emergence of the knowledge based global economy and asset augmenting FDI influenced a more dynamic approach to both the logistics of the siting of corporate activities, and to the competitive advantages of nations and or regions. In the former case, firms need to take account not only of the presence and cost of traditional factor endowments, of transport costs, of current demand levels and patterns; but also of distance related transaction costs (Storper & Scott, 1995), of dynamic externalities, knowledge accumulation, and interactive learning (Malmberg, Sölvell and Zander, 1996; Florida, 1995), of spatially related innovation and technological standards (Antonelli, 1998), of the increasing dispersion of created assets, and of the need to conclude cross border asset augmenting and/or asset exploiting alliances (Dunning 1998).

Given that a firm has a set of competitive or O specific advantages, and the immobile assets of a foreign country are such as to warrant locating value adding or asset augmenting activities there, internalization advantages explain what determines whether such activities are undertaken by the firms possessing the advantages, or by indigenous producers buying the advan-tage, or the right to its use, in the open market, or acquiring them by some other means. Internalization theory explains, in this context, that as long as the transaction and coordination costs of using external arm's length markets in the exchange of intermediate products, information, technology, marketing techniques, etc. exceed those incurred by internal hierarchies, then it will pay a firm to engage in FDI, rather than conclude a licensing or another market related agreement with a foreign producer (Dunning, 2000).

In conclusion, this theory explains why the studied firms engage in value added activities outside their national boundaries, gaining, in that way, new resources, the access to new capabilities, markets, or to lower the unit costs of production, or to gain market power, or to forestall or thwart the behaviour of competirors, becoming a "collection or bundle of resources" (Barney, 1991), or a "repository of knowledge and capabilities" (Madhok, 1996; Kogut & Zander, 1992).

2.2.4. Resource and knowledge based views of the firm

As mentioned above, high-tech and knowledge intensive investments are motivated by the notion that a firm's competitive advantage depends on its strategic assets (Peng, 2013), such as technical skills and innovative capacity and flexibility (Mi, Yue, Shao, Kang and Liu, 2020; Sutherland, Anderson and Hu, 2020; Kang and Johanson, 2000). Such idea converges with the Resource-based view of the firm, considered a central theoretical perspective in strategic management (Barney, 1991; Dierickx and Cool, 1989; Montgomery and Wernerfelt, 1988).

The resource-based view of the firm sees the company as an unique group of tangible and intangible resources and skills (Penrose, 1959) and associates superior performance to the possession of resources (such as technology) that are valuable, rare, inimitable, and non-substitutable (Barney, 1991; Rumelt, 1984). This perspective identifies knowledge and international experience as a valuable resource, unique and hard to imitate (Penrose, 1959).

More recently, an evolution from the previous perspective has been defended: the knowledge based view of the firm, which considers that knowledge is the central resource for a companies' competitiveness (Nonaka, 1994; Kogut and Zanger, 1992).

Traditionally, knowledge has been largely seen as locally developed in the home country and headquarters, and then dispersed across the entire MNc network (Vernon, 1966). However, more recently it has been argued that MNCs' source knowledge to a growing extent from their subsidiaries abroad (Athreye, Batsakis and Singh, 2016; Gupta and Govindarajan, 2000). Hence, in today's world of intense global knowledge based competition, subsidiaries can play a major role as knowledge sources for the MNC to develop and maintain their competitive advantage (Mudambi & Santangelo, 2016).

2.2.5. Subsidiary roles/strategies

The analysis of subsidiary roles and evolution departs from the view of the modern multinational as a dynamic differentiated network: a system including a heterogeneous group of subsidiaries with distinct scopes and roles (Forsgren and Johanson, 1992). In this sense, foreign subsidiaries are not only viewed as having market or efficiency seeking roles, they have started to evolve towards knowledge-seeking roles, having a positive impact on the generation of new knowledge (Zhang, Zhao, Bournakis, Pearce and Papanastassiou, 2018). This has been one of the fastest-growing streams in the MNC literature in the last two decades because of its more realistic depicting of the internal complexity of MNCs, allowing a more accurate expectation of their impact (Pearce, 2001; Birkinshaw, 1997, 2000; Taggart, 1996; Young, Hood and Dunlop 1988; White and Poynter, 1984). In this context, decentralized MNC networks enable diverse local knowledge sourcing activities, collaboration and knowledge and technology exchanges, increasing MNC's innovation performance (Boone, Lokshin, Guenter and Belderbos, 2019; Hedlund, 1986).

Adopting this perspective, it is relevant to analyse the 'scope typology' of subsidiary roles (Pearce, 2001; Pearce and Papanastassiou, 1997; Taggart, 1996; Young, Hood and Dunlop, 1988; White and Poynter, 1984). This typology, first presented by White and Poynter (1984), characterizes subsidiary roles according to three dimensions: market (group of markets that the subsidiary supplies), product (extension of the product line) and value-added (range of activities through which the subsidiary creates value) scope.

Table 1 - Scope typology

Subsidiary types	Scope		
	Market	**Product**	**Value Added**
Marketing satellite: locally commercializes imported good produced in any part of the group.	Narrow (local)	Limited	Narrow
Miniature replica: produces and sells some product lines from the mother company or related product lines in the local country.	Very narrow (local)	Wide	Depends on the variant
Rationalized manufacturer: produces a designated group of components or products in the external country for the global market.	Wide	Limited	Limited
Product specialist: develops, produces and commercializes a limited number of products for global markets.	Wide (global)	Narrow	Wide
Strategic independent: has the freedom and the resources to develop ligns of business for local or global market.	Wide (global)	Wide	Wide

Source: Own elaboration based on White and Poynter (1984)

The initial typology envisaged by White and Poynter (1984) was simplified by Pearce (2001), who considers three subsidiary types, as follows. An autarkic subsidiary supplies exclusively the host country. It is a market-seeking subsidiary, having a wide product scope, a narrow market scope and a limited value-added. A rationalized subsidiary produces part of the firm's goods or specializes in a productive stage (narrow product scope), for export markets (wide market scope), having a quite limited value-added scope (usually less than its autarkic counterpart). Finally, a product mandate subsidiary is characterized by narrow product scope, wide market scope (regional/global markets), having the resources and mandate to develop, produce and market the product(s) for which it is responsible. Due to its value-added activities and considerable autonomy and resources, the mandate presents itself as the most promising subsidiary type from a host country standpoint (Tavares, 2002). This last typology is the one connected with knowledge-intensive subsidiaries and can, thus, be defined as a "creative subsidiary", a concept introduced by Pearce (1999), who studied the positioning regarding the acquisition of dispersed technology and its application in heterarchical MNCs, suggesting that firms recognize the necessity to respond to technological and market heterogeneity, and respond to this need through creative subsidiaries that access and apply localized dimensions of knowledge (scientific, technological, market). It is, thus, expected that these subsidiaries contribute to the growth of the available knowledge for the MNC, to a significant and individualized extension of the product scale of the group (Pearce, 1999) and to play a significant role in the firm's competitiveness (Bartlett and Goshal, 1989; Hedlund, 1986).

Cantwell and Mudambi (2005) presented a novel approach when they differentiated between "competence exploiting" and "competence creating subsidiaries". According to the authors, foreign subsidiaries are not only purely technological "containers" of assets transferred by the headquarters, but they are supposed to adopt a more independent and technologically active behaviour. In this context, "historically, MNCs located R&D in their subsidiaries abroad mainly for the purposes of the adaptation of products developed in their home countries to local tastes or customer needs, and the adaptation of processes to local resource availabilities and production conditions" (Cantwell and Mudambi, 2005, p.1). Consequently, their role was mainly competence exploiting as subsidiaries depended on the competence of their parent companies. However, in recent years, it is possible to observe a shift in paradigm, linked to the closer integration of subsidiaries into international networks within the MNC (Cantwell and Mudambi, 2005). Some subsidiary R&D has gained a more creative role, to generate new technology in accordance with the comparative advantage in innovation of the country in which the subsidiary is located (Cantwell and Janne, 1999; Pearce, 1999; Zander, 1999; Pearce and Papanastassiou, 1997; Cantwell, 1995). This transformation has led to an increase in the level of R&D undertaken in those subsidiaries that have acquired this kind of competence-creating mandate, where has been a change in the motives for and thus in the drivers of local R&D (Cantwell and Mudambi, 2005).

These competence creative and innovation subsidiaries, also known as centers of excellence, possess great potential to generate knowledge, using more recent technology, employing greater numbers of skilled workers and undertaking more R&D, and are, therefore, characteristic of the investments under analysis of knowledge intensive and high value added activities (Li and Bathelt, 2019; Narula and Dunning, 2000).

2.2.6. Human capital

Foreign Direct Investment and human capital are, beyond any doubt, two aspects of great relevance to the economic growth and prosperity of any developed nation. These topics have been widely studied, and commanded two very rich bodies of literature. More recently, the links between these two engines of growth have also been the object of exploration. It is widely acknowledged that there is a two-way causality between FDI and human capital (Blomström and Kokko, 2003) – i.e. FDI may promote human capital formation (Slaughter, 2002), and human capital availability may boost a country's attractiveness as a recipient of FDI projects (Noorbakhsh, Paloni and Youssef, 2001).

As a result of new technological advances and the recent shift of FDI towards more capital, knowledge and skill-intensive industries, the existence of a well-educated pool of labour in the host economy is increasingly more attractive to MNCs, in relation to low labour costs (Pfeffermann and Madarassy, 1992).

In this sense, Schultz (1961) defends that human capital investments are the reason behind the superiority in production of the technically advanced countries. Formal education is, therefore, crucial in the innovation process.

In an environment of rapid and constant technological change and progress, top educated and top skilled workers are crucial to firms' capacity to absorb and organize knowledge and to inonovate, since firms lose their markets unless they innovate (Lenihan, McGuirk and Murphy, 2019; Frank and Obloj, 2013; Santarelli and Tran, 2013; Unger, Rauch, Frese and Rosenbusch, 2011; Costa and Teixeira, 2005; Layard, Sargan, Ager and Jones, 1971), specially to those characterized by high levels of knowledge intensity (Bosma, Praag, Thurik and Wit, 2004). Highly trained and educated people are necessary to change the design of products, processes and organisations (Costa and Teixeira, 2005; Whiston, Senker and MacDonald, 1980). In other words, they are fundamental to innovation. In the same line, other authors (Booth and Snower, 1996; Bartel and Lichtenberg, 1987; Welch, 1970) argue that in a dynamic context, educated workers can take more advantage of available technology and, consequently, be more productive. In fact, "high levels of education may interact with technological progress on at least two levels (Rebelo, 1994): firstly, highly skilled individuals, who have undergone long periods of formal schooling, are responsible for the vast majority of innovations; secondly, the effective use of new technologies often requires high levels of human capital" (Costa and Teixeira, 2005, p.8).

The globalization process is the main reason behind this shift of paradigm, leading to the adoption of new strategies by MNCs, who, in order to enhance their competitiveness, adapt their organization strategies so that activities such as finance, research and development (R&D), accounting, training, among others, are carried out by affiliates in locations best suited to each activity in particular (Noorbakhsh, Paloni and Youssef, 2001). In this scenario, FDI allows MNCs to have access to production factors, in particular, created assets, with the goal of rationalizing production internationally (Dunning & Wymbs, 1999). MNCs are, thus, attracted to countries that offer favourable combinations of locational determinants such as conditions for efficient operations, high quality resources/assets, and access to markets (Dunning, 1998).

In this context, authors such as Dunning (2009, 1988, 1977), Zhang and Markusen (1999) and Lucas (1990) identify human capital as one of the key determinants of FDI inflows, noting that there is a positive relation between foreign ownership intense in R&D and high human capital intensity (Teixeira and Tavares, 2014). Availability of higher levels of human capital in the form of skilled workers, such as local engineers, technicians, managers and accountants, is, therefore, a favourable factor in the attraction of FDI (Kinda, 2013; Zhang and Markusen, 1999). In this context, there is a relationship between FDI and human capital, with the type and level of human capital determining the type of FDI inflow. In other words, "the impact of human capital on FDI may depend on the MNCs activity" (Cleeve, Debrah and Yiheyis, 2015). More precisely, MNCs from non-skill intensive industries tend to invest in countries characterized by low skill and low cost labor, while MNCs from knowledge and skill intensive industries normally seek to invest in skilled labor abundant countries (Yeaple, 2003). Countries with higher levels of human capital are, therefore, more attractive to the knowledge and skill-intensive sector (Noorbakhsh, Paloni, & Youssef, 2001).

2.3. FDI evolution in Portugal and determinants of recent investments

Up until recently FDI inflows in Portugal often targeted (relatively less qualified) labor-intensive activities (Teixeira and Loureiro, 2019). These investments came often from more developed economies, abundant in skilled labor, demanding low-skilled/unskilled labor, with Portugal's comparative advantage laying on low-skilled sectors (Teixeira and Loureiro, 2019).

A study developed by Castro (2000) regarding the characteristics of inward FDI in Portugal and its determinants showed that labour conditions and economic and political stability were clearly the determinants identified as being the most important in Portugal. Competition in the home market, access to the local market, and the internalisation of downstream activities were also relevant. This suggested a duality of motivations for inward FDI in Portugal between cost reduction and market seeking. Nevertheless, it was possible to show that the importance of these motivations had not been stable in Portugal's recent history. Cost reduction, which can be associated with export oriented FDI, was the main motivation for firms whose first investment was in 1960-74 or 1986-90 (both periods are associated with the deepening of Portugal's economic relations with the most developed European nations : the former follows EFTA membership; the latter is the period immediately after Portugal joined the EEC) (Castro and Buckley, 2001; Castro, 2000). In the other periods considered, access to the local market was more relevant than labour costs and skills. From the middle 1980s to the late 1990s, cost reduction seems to have been progressively replaced by access to the local market as the main motivation for inward FDI. Firms created or acquired in the 1990s were much more local market-oriented than investments that took place between 1960 and 1990. Of the latter, those created between 1986 and 1990 formed the most export-oriented group. This predominance of market seeking FDI is also associated with the fact that one third of the firms created after 1995 were purely commercial subsidiaries (Castro and Buckley, 2001; Castro, 2000).

According to Simões and Cartaxo (2011), the sectoral breakdown of Portugal's inward FDI flows for 2000-2009 suggests a declining importance of manufacturing. Instead, services accounted for the largest share of Inward Foreign Direct Investment (IFDI), comprising almost 80% of total IFDI flows in 2000-2009.

However, recent years have proved to be years of renewed prospects for Portugal. According to the EY Attractiveness Survey (2019), since 2017 foreign investors started to launch a record-breaking number of projects, consequently creating thousands of new jobs. Indeed, business leaders' assessment of Portugal's attractiveness is changing and "short-term investment plans in the country are among the highest in Europe" (EY, 2019, p.3). AICEP Portugal Global (2020), the countries' agency for investment and external commerce, also states that in 2019 the Portugal has obtained over one million euros in foreign and Portuguese investment (three quarters of those investments are from foreign MNCs). The agency reveals that among the sectors with the highest volume of investment stand out the automobile and components industry with over 200 million euros, in 15 new projects (AICEP, 2020).

According to EY (2019), some of the country's characteristics that are appealing to global investors include key structural factors such as "quality of life, social stability, infrastructure and local labor" (EY, 2019, p.3). In this sense, business leaders' priorities include the support of high-tech industries and innovation, the development of education and skills, as well as the reducing of taxation (EY, 2019). Technological change and talent imbalances, and how they work together, are, therefore considered the most influential forces behind investment decisions.

One of the reasons that explain Portugal's high attractiveness values is its language. According to the Future of Languages Report (2019), Portugal is seen as a gateway into a Lusophone market of 250 million people. Portuguese is the fifth-most widely spoken language globally and the official language in nine countries, and it is spoken by people spread across Europe, Africa, America and Asia. In addition, Portugal has a unique geographic advantage, being positioned at the intersection of key shipping routes between Europe, America and Asia, "making it an appealing hub for foreign investment within the framework of global value chains" (EY, 2019, p.9). In 2016, the foreign content of Portugal's exports was higher than both the OECD and EU averages, suggesting a considerable global value chain integration of the Portuguese economy. From a sectorial standpoint, "computers and electronic equipment was among the industries where this integration was more significant, suggesting an upward move in value chains toward activities with higher innovation content" (EY, 2019, p.9).

Another attractive factor identified by the EY Attractiveness Survey (2019) is the country's dynamic innovation ecosystem. In this context, Portugal has been considered an innovation hotspot at a global scale. In the Global Competitiveness report (2018), the Portuguese innovation ecosystem is highly regarded, occupying the 32nd position in the innovation capability indicator and 26th in the quality of research institutions, out of economies 140 considered. Finally, wide availability of talent concludes the list of the main reasons why foreign investors perceive Portugal as an attractive destination (EY, 2019). Portugal ranks 43rd out of 130 countries in the Global Human Capital Report (2018). Within the human capital development pillar, Portugal ranks 18th in terms of the skill diversity of graduates. In 2019's Global Competitiveness report, the country ranks in 42nd in the skills of current workforce pilar. The Institute for Management Development (IMD), in turn, considers readily available skilled labor, management education that meets the needs of the business community, and broad language skills to be Portugal's top strengths in terms of readiness of its talent pool (EY, 2019).

Lisbon hosts the Web Summit, Europe's largest tech event, and the MoneyConf, a fintech conference where the world's leading banks, tech firms and disruptive start-ups meet, was moved from Dublin to Lisbon in 2019. Programs such as StartUp Portugal develop further instruments to attract new investment, talent and innovation, such as the 200M CoInvestment Fund and a StartUp Visa for foreign entrepreneurs. A range of co-working spaces and over 150 incubators and accelerators bring a new impetus to the ecosystem. The Portuguese Government is also prioritizing the innovation ecosystem through several initiatives to foster technological collaboration and talent development (Conectividade, Inovação e Tecnologia (CITec), Indústria

4.0 and Program Interface are just a few examples) (EY, 2019). All of these initiatives contribute to put Portugal on the international radar.

Indeed, a study developed by Teixeira and Tavares (2006), based on evidence gathered through a purposefully-designed and representative large-scale survey of R&D-performing firms located in Portugal, had previously showed that human capital exerts a positive and significant influence on FDI attraction in Portugal. Lopes and Simões (2017) also studied this shift of tendency towards knowledge intensive investments, pointing out portuguese skilled labour capabilities, namely in terms of creativity and work commitment, as the main decisive factor for the decision of companies such as Siemens (2005) to invest in Portugal.

3. High value added and high tech foreign subsidiaries in Portugal: An Empirical Study

This chapter will present the methodology used in this study in order to assess the motivations for foreign investments in Portugal, as well as the subsidiary roles and their possible impact on the MNC.

The data gathering method underlying this research will be structured interviews. We will thus and firstly present the model of interviews used (Section 3.1). In Section 3.2, a characterization of the sample will be explained, with the Portuguese subsidiaries analysed, along with descriptive statistics of the main data collected and its relationship with the previously studied literature.

3.1. Methodology

In order to achieve better and more thoroughly characterize the phenomenon under analysis, the method chosen is a qualitative analysis relying on structured interviews to key stakeholders of foreign MNC subsidiaries located in Portugal. Since there are no available databases concerning this specific phenomenon, it becomes mandatory to carry out a specific and original collection of primary data for this study. The aim is, thus, to characterize and provide empirical evidence on MNCs' operations in the host economy, contributing for a better understanding of the motivations underlying the high tech and high value added foreign investments in Portugal, the patterns of these investments and activities and the drivers for their location in the country. In the end, the treatment of these results must lead us to: (1) draw up the overall scenario regarding the recent high-value added and knowledge intensive FDI in Portugal; (2) unveil the motives behind the decision to locate this investments in Portugal; (3) describe the characteristics, evolution and the type of strategic roles of these subsidiaries.

In this context, a structured interview, which consists of the interaction between the interviewer and the interviewee based on a set of pre-established questions and in a limited set of answer categories which are registered by the interviewer according to the codification system previously established (Aires, 2015; Fontana and Frey, 1994), is the most adequate method. In this sense, according to Aires (2015), structured interviews can be replied as a fixed set of closed questions, which are better to quantify, making it a more adequate method to test for reliability. In other words, it allows us to expose the relations between the literature previously studied and the results of the interview. On the other hand, structured interviews are quicker to conduct which means that interviews can take place within a short amount of time. (Saunders, Lewis and Thornill, 2016; Carmo & Ferreira, 1998). This is particularly important when dealing with busy managers of big companies, who not always can dispend a lot of their time.

The data for the implementation of this methodology was, thus, collected through a questionnaire formed by questions of closed answers, presented in online interviews, with the purpose of subjecting the hypotheses, formulated based on the literature review. Closed answers are, thus, beneficial, in the sense that they minimize errors and contribute to obtain rational answers from the different interviewees, who all answer the same questions and listen them in the same order and format. On the other hand, this type of interviews also allows the interviewer to be impartial, establishing a balanced relation of familiarity and impersonality at the same time (Aires, 2015).

In spite of the fact that the questions presented on this questionnaire were closed questions, the participants were encouraged to give more detailed answers whenever they considered it relevant, incorporating, in this way, fix elements with the flexibility to include other elements or themes of interest (Aires, 2015). Since the shift regarding high value-added and knowledge intensive investments by foreign multinationals in Portugal is still an emerging and very recent phenomenon, we believe that these in-depth perspectives will provide a deeper understanding, allowing us access to detailed insights required from individual participants. This need to give the interviews space to add relevant information is the reason why the questionnaire was presented through online interviews, instead of being sent by e-mail. The chosen method will, thus, allow us the exploration of the views, experiences and motivations of the key stakeholders of the multinational companies investing in Portugal. In this way, we believe that structured interviews, in opposing to unstructured interviews, will allow us to define key questions which will give us the desired perspectives, but also allow us or the interviewee to diverge in order to pursue an idea or response in more detail, facilitating the analysis, quantification and comparison (Aires, 2015).

3.1.1. Questionnaire structure

The primary data collection was obtained through interviews where the interviewees answered a questionnaire (see Appendix 1). This questionnaire started with a brief description of the company and was later divided into three main topics, related to the reviewed literature and the theoretical and conceptual basis adopted:

(i) process of establishment in Portugal;

(ii) subsidiary activity in Portugal;

(iii) local relations.

In what concerns the first topic, questions regarding investment motivations and entry mode were posed. Topics such as the subsidiary's characterization, its level of autonomy and composition of human capital, as well as the impact of the subsidiary creation on the MNC, were discussed in the second section of the questionnaire.

Finally, the last part of the survey sought to understand the importance of local institutions, such as universities and research centres, in the activity of the subsidiary.

The questionnaire (see Appendix 1) consisted, in its majority, of closed questions, using a Likert (1932) scale of five points, which consists of "a set of statements offered for a situation under study, where participants are asked to show their level of agreement (from strongly disagree to strongly agree) with the given statement on a metric scale. Here all the statements in combination reveal the specific dimension of the attitude towards the issue, hence, necessarily inter-linked with each other" (Joshi, Kale, Chandel and Pal, 2015, p. 397). In this context, a Likert scale is appropriate for this particular questionnaire since it allows the construction of a scale based on the aim of the research. The purpose of the research is to understand the perceptions of the participants on specific variables, which are expressed by different items of the questionnaire. These items address a specific dimension of the phenomenon under inquiry and, in cohesion, measure the whole phenomenon. Therefore, during the analysis, the scores of all the items of the questionnaire can be combined in order to generate a composite score, which logically measures the totality of the topic that is being studied (Joshi, Kale, Chandel and Pal, 2015). A five points scale, in specific, allows symmetry and balance: symmetry in the sense that questions contain equal numbers of positive and negative positions whose respective distances apart are bilaterally symmetric about the neutral value; balance meaning that the distance between each value is the same, allowing for quantitative comparisons such as averaging to be valid (Joshi, Kale, Chandel and Pal, 2015). This results in more objective answers and in the increase of reliability (Croasmun and Ostrom, 2011).

In this context, with the data obtained from the questionnaires, a quantitative analysis was conducted, commenting on the results in order to answer the research questions and to position the recent wave of high value added and knowledge intensive FDI in Portugal within the relevant theoretical basis. The goal was, thus, to verify the consonance of this process with the theoretical frameworks and literature reviewed in Chapter 2.

3.1.2. Sample

The target of these interviews were managers from high value added, high tech and knowledge intensive MNC Portuguese subsidiaries. Besides subsidiary managers, other contacts were established with experts in the area connected with Portuguese investment attraction agencies.

At a first stage, these experts were the first to be contacted, since the main goal of these particular interviews was to obtain their general perspective on the foreign direct investment scenario in Portugal, as well as their validation regarding the study's methodology, the list of companies to interview and the questionnaire's structure and content. In this sense, a request for an interview was sent by e-mail to 8 experts, from which 4 responded, namely two representatives of InvestPorto, on representative of InvestBraga and one representative of AICEP (Agência para o Investimento e Comércio Externo de Portugal), which results in a response rate of 50% for this stage of the application of the metodology.

Table 2: List of contacted experts

Institution	Name of the interviewee	Job title
Invest Porto	Filipe Ortigão Guimarães	Director
	José Sequeira	Consultor
Aliados Consulting	Inês Santos Silva	Consultor
AICEP	Philomène Dias	Deputy Director Investment - Corporate Department
Invest Braga	Carlos Oliveira	Director (until 2018)
Invest Lisboa	Rui Coelho	Director (until 2019)
	Diogo Ivo Cruz	Project Director
Startup Lisboa	Miguel Fontes	Director Executivo

Source: Own elaboration

At a second stage, interviews were conducted with representatives of the Portuguese subsidiaries. Since there is no available database concerning high value added and knowledge intensive international investments in Portugal, the identification of the companies to interview was conducted based on the research on internet platforms, as well as based on the suggestions of the experts interviewed at the first stage. 14 subsidiaries were, thus, identified as relevant to this study, based on their activity in the country, and, therefore targeted. In this context, after selecting our target, e-mails were sent, where the main goal of the dissertation and the importance of the desired interviewee testimony were explained. From the 14 MNCs contacted, 4 responded affirmatively to the interview request, which consists of a response rate of 29%. After each positive response, a meeting was scheduled with each participant (either through Skype, Microsoft Teams or Zoom), where the questionnaire was presented and answered.

It is important to note that the particular context in which this dissertation was carried out during the COVID-19 pandemic was an extremely difficult one. It was indeed much more challenging to obtain positive answers from the subsidiary representatives, with the companies' activity reduced and other problems and priorities to attend. On the other hand, these special circumstances also made it impossible to carry out the interviews in person, reason why the interviews happened through the above mentioned online platforms. In addition, it should be noted that, apart from the particular context of pandemic, other factors contributed to the low response rate from the contacted subsidiary representatives, namely, the fact that both Nathalie Risache, former Manager of Natixis in Portugal, and Jorge Magalhães, Senior Vice-President of Vestas Portugal changed functions and left Portugal during the interview process.

In this context, a list with the totality of subsidiaries contacted is presented in the following page.

Table 3: List of contacted subsidiaries

MNC	Portuguese subsidiary	Interviewee	Job title
Euronext technologies	Euronext Tech Center Porto	Isabel Ucha	CEO Euronext Portugal
Natixis	Natixis IT Center of Expertise	Nathalie Risacher	Senior Country Manager Natixis in Portugal
Critical Manufacturing	Critical Manufacturing	Francisco Almada Lobo	CEO Critical Manufacturing
Vestas	Vestas Design Center Porto	Jorge Magalhães	Senior Vice-President
Farfetch	Farfetch Portugal	Luís Teixeira	Chief Operations Officer
Bosch	Bosch Car Multimedia Portugal	Carlos Ribas	Bosch representative in Portugal
Siemens	Siemens Portugal	Pedro Pires de Miranda	Executive President
Google	Google Portugal	Bernardo Correia	Country Manager Portugal
Accenture	Accenture Portugal	José Gonçalves	Managing Director
Mercedes	Mercedes-Benz.io Portugal	Alexandre Vaz	Managing Director
Volkswagen	Volkswagen digital solutions	Marcel Bodensiek	Managing Director
		Marc Jacobi	Managing Director
Cisco	Cisco Portugal	Miguel Almeida	General Manager
Xing	Xing Portugal	Miguel Garcia	General Manager (until february 2020)
Blip	Blip	Ângelo Valente	Senior Manager of Marketing, Communications and External Affairs

Source: Own elaboration

3.2. Empirical study: Interviews

3.2.1 Preliminary interviews with experts in FDI into Portugal

As mentioned above, the first stage of interviews was directed towards experts with relevant roles in Portuguese investment agencies. José Sequeira, a former consultant at InvestPorto, Inês Santos Silva, a consultant at InvestPorto, Carlos Oliveira, former director of InvestBraga, and Philomène Dias, Deputy Director Investment at AICEP were, thus, the interviewed experts.

Table 4: Interviewed experts

Institution	Name of the interviewee	Job title
Invest Porto	José Sequeira	Consultor
Aliados Consulting	Inês Santos Silva	Consultor
AICEP	Philomène Dias	Deputy Director Investment - Corporate Department
Invest Braga	Carlos Oliveira	Director (until 2018)

Source: Own elaboration

At this stage, the interviews were semi structured, given that the questionnaire wasn't presented to the interviewees with the goal of obtaining concrete answers to the presented questions. Instead, the questionnaire was presented with the goal to obtain the experts' validation regarding the used methodology and the content of the questionnaire that would later be presented to the subsidiary representatives.

In addition, questions were posed related to the identification of the sample of investments to consider, as well as to the perception of these experts regarding the motivations of the investments as well as the conditions offered by the country, based on their experience. In this sense, all of the interviewees indicated the quality of portuguese human capital and talent as the main appealing characteristic for the foreign MNCs. In fact, according to Philomène Dias, Portugal presents the second best European ratio of engineering graduates over graduates in general, which is appealing for these Portuguese subsidiaries that are mostly excellence or engineering centres. Besides being qualified, Portuguese human resources present the advantage of having a strong domain of foreign languages and a strong international culture and international mindset, having the ability to easily interact with different cultures. In addition, its price is competitive, which, despite not playing the most important role in the investor's decision, is a favourable factor, especially when combined with the low living costs, quality of life and low risk factor in Portugal, considered by investors as a safe country with a stable political system.

Besides Portuguese talent, another attractive factor of the country consists of the cooperation with local universities as well as with research centres, which play an important role in helping these big international players in developing future solutions. The growing ecosystem of startups in Portugal is also, according to the interviewed experts, an indicator of a great degree of innovation, as well as the growing number of foreign students attending Portuguese universities, reinforcing that the country is an important international destination which attracts international talent.

In addition, the connectivity and flight connections are also a positive factor, facilitating the access to the main European destinations in a short amount of time, as well as the reliable technological and telecommunications infrastructure.

When it comes to fiscal incentives, the interviewees don't consider it to be one of the essential reasons why Portugal is an attractive host country, mainly because this type of support is limited when it comes to competency centres. The benefits that do exist and are more used concern hiring support (IEFP internship). Despite this, Portugal presents an attractive tax regime for expatriate workers and facilities in the process of obtaining a residence permit for international talent (Tech Visa program), which gives the company the guaranty that it can hire international talent without restrictions, facilitating the mobility of international talent.

Lastly, the interviewed experts consider that the existence of investment agencies and their availability also consist of a factor in favour of Portugal when it comes do the investor's decision. They play an important accompany and helping role, assisting the MNC in any stage of the localization process, sharing knowledge and information and connecting the company with important interlocutors

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3.2.2. Interviews: descriptive analysis and discussion

As mentioned above, interviews were used as the main source of information collection. Key players of the subsidiaries were the object of these interviews, which were conducted in online platforms (such as skype) and throughout which a questionnaire (see appendix 1) was presented to the interviewees.

In this context, interviews were conducted with Ângelo Valente, Senior Manager of Marketing Communications and External Affairs and Senior Employer Brand Manager at Blip; Miguel Garcia, former General Manager at Xing Portugal; Francisco Almada Lobo, CEO of Critical Manufacturing; and Mark Jacobi, Managing Director of Volkswagen Digital Solutions.

Table 5: Interviewed subsidiaries

MNC	Portuguese subsidiary	Interviewee	Job title
Critical Manufacturing	Critical Manufacturing	Francisco Almada Lobo	CEO Critical Manufacturing
Volkswagen	Volkswagen Digital Solutions	Marc Jacobi	Managing Director
Xing	Xing Portugal	Miguel Garcia	General Manager (until february 2020)
Blip	Blip	Ângelo Valente	Senior Manager of Marketing, Communications and External Affairs

Source: Own elaboration

At a first stage, a brief characterization of the companies will be presented, followed by the description of the interviewees' perspective regarding the main topics covered by the interview and questionnaire.

Blip

Blip is a software development company based in Porto, Portugal, which was founded in 2009. The company started off as a Portuguese start-up dedicated to the development of technology and software for web and mobile platforms. In 2012 it became part of a Group with Headquarters in London named Betfair. In February 2016, Paddy Power and Betfair merged and created a group that is, now, one of the largest in the Online Sports Betting and Gaming Industry. In the same year, an investment of 2,5 million euros was made in the creation of its centre of technological production in Bonfim, Porto.

The company is in the API Billionaire's club alongside Twitter, Facebook, eBay and Google. It started its activity in Porto with only 3 employees, counting now, in 2020, with 330 employees, having been considered, in 2017, the best company to work at in Portugal. In fact, Blip employees work in a disruptive and diversified environment, with flexible schedules and elements such as gaming machines, relaxation rooms, small gardens and scooters in the hallways. In addition, a considerable amount of women work at BLIP, which is not always common in technological companies, as well as employees of various nationalities and more elderly, which proves the diversity within the subsidiary. On the other hand, salaries are above the average.

Blip is, thus, considered a centre of excellence for the development of sports betting products, developing highly performant and reliable websites, mobile apps and retail systems for Paddy Power, Betfair and TVG brands. The subsidiary has, thus, managed to enter a new dimension and become a major support in the conquest of new markets of the British group. Last year, the company's sales turnover was of 17,5 million euros.

Xing

Xing Portugal, on its turn, is a software development company as well, which was established in 2017 in UPTEC (the science and technology park of University of Porto). In 2019, with the growing of the company, it opened a new space in Matosinhos.

Xing was founded in 2003 as openBC (Open Business Contact), a contemporary of Linkedin, as a sort of telephone directory where users had professional contacts accessible. The company changet its name to Xing three years later. The website was operated by Xing SE, who, in 2019, changed its name to New Work SE. It is, thus, the main social network for professional contacts in German-speaking countries, counting with more than 18 million members. Xing Portugal is, in this context, a tech and engineering centre who develops software for this social platform.

At the time of its establishment in Portugal, the subsidiary counted with only 25 workers. As of today, Xing counts with 141 employees and presented, in 2019, a sales turnover value of around 30 million euros.

Critical Manufacturing

Critical Manufacturing is a software development company, founded in 2009. The company is a spin-off company of Critical Software and is focused on providing automation and manufacturing software for high-tech industries, such as photovoltaics, electronics and semiconductors. In this context, the company provides modern, flexible and configurable manufacturing execution systems, being heavily involved in Industry 4.0. It has offices in Portugal, USA, Germany and China.

After inaugurating with only 15 workers, the company now counts with 240 employees and the sales turnover in 2019 was of 18 million euros.

It is important to note that Critical Manufacturing has a different characteristic when compared with the two other interviewed companies since its activity in Portugal did not start of as a subsidiary, which means that the mother company was actually Portuguese. Nevertheless, in 2018 the main actionist of Critical Manufacturing, Critical Software, sold its part to ASM Pacific Technology, a company from Singapore, turning Critical Manufacturing into its subsidiary. Because of these particular characteristic, the interviewee was not able to answer the totality of the questions presented in the questionnaire, namely questions B.1, B.2 and C.4.

Volkswagen Digital Solutions

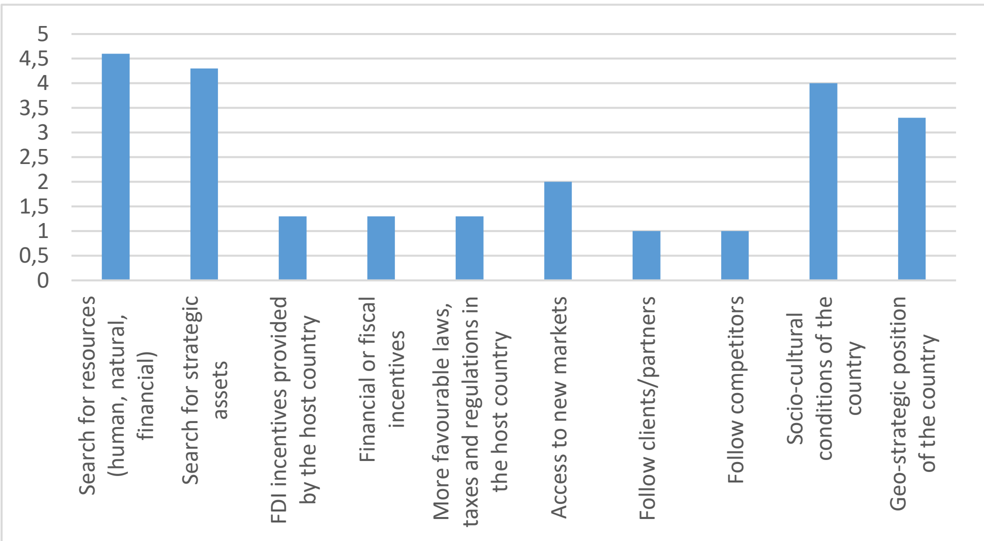
Lastly, Volkswagen Digital Solutions also consists of a software development company, that has been established in Portugal since 2019. The company is part of the Volkswagen Group, working as its innovation and software developing centre and, therefore, playing a major role in its strategy of going digital, by developing software mainly for the digital ecosystems and internal corporate processes. The subsidiary is the only of this kind outside of Germany and its projects vary from products for commercial vehicles, to software development for the end-user and to application support. Volkswagen Digital Solutions is, thus, composed by three different tech units who work as centers of excellence for the group.

The subsidiary counted with an initial number of 48 workers and nowadays counts with 155. In the last available year (2019), Volkswagen Digital Solutions presented a turnover of 9 million euros.

The first part of the questionnaire focused on the companies establishing process in Portugal. In this sense, when the interviewees were questioned on the companies' motivations to invest in Portugal, they highlighted the search for resources, namely human resources, and strategic assets as the main reason for the investment. Dunning (1993) defends that asset seeking is, in fact, de most usual motivation in what concerns high value added and knowledge-intensive FDI, since the success of these MNCs depends on its innovation capacity, made possible by qualified human capital and skills. In this context, investing companies tend to target countries with high levels of knowledge, skills, technology and local innovation. These values are, thus, in accordance with the expectable based on Dunning's theory of FDI motivations.

The country's socio-cultural conditions and geostrategic position, as well as access to new markets were also indicated as having a considerable relevance to the investment decision. These values are in accordance with the expected by the location advantages of Dunning's OLI paradigm (2000), which defend that the conditions offered by other countries, such as market dimension and political and economic characteristics, play an important role in the investors choice of country. In addition, these answers also confirm one of the points of EY's study (2019) mentioned in Section 2.3 of the present dissertation, which stated that Portugal's quality of life, social stability and infrastructure are some of the characteristics that are appealing to international investors. On the other hand, the interviewees didn't consider that factors such as financial or tax benefits to investment, favourable legislation or the presence of clients, business partners and/or competitors played any role in the decision to invest in Portugal.

Figure 1 - Motivations for FDI investment in Portugal

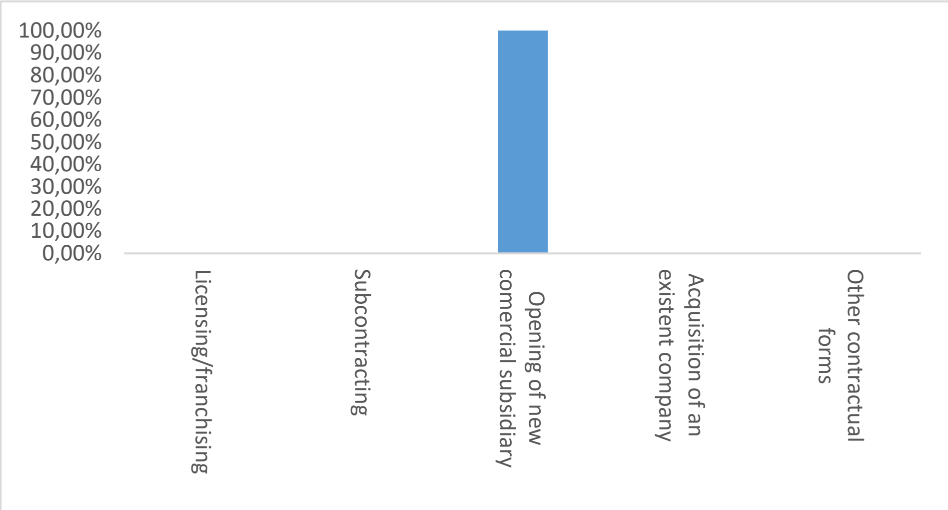


Source: Own elaboration

When it comes to the chosen entry mode, all of the interviewed companies opened a commercial subsidiary, with the creation of new companies. Internalization theory, (Hennart, 1982; Rugman, 1981; Buckley and Casson, 1976) supports this strategic option by explaining that, in the context of high value added and knowledge intensive investments, the opening of subsidiaries is preferable to other alternatives, such as licensing or joint ventures, since FDI is the firm's internal substitute for the external diffusion of knowledge. When the MNC has an intangible, knowledge based firm specific advantage and needs to prevent its dissipation in foreign markets through the use of an internal market (Rugman 1981), FDI is preferable to licensing or joint ventures, with firm specific advantages being developed in subsidiaries. On the other hand, the OLI paradigm also supports these results, by predicting that opening a subsidiary in a foreign market brings advantages to the MNC when ownership, location and internalization advantages are verified. Thus, besides the internalization advantages previously mentioned, in what concerns these high-value added and knowledge intensive investments, ownership advantages are also verified through the MNC's capability to access and organize knowledge intensive factors from the host country (Dunning, 2000). Location advantages are also verified since an "optimum locational portfolio of assets is a competitive advantage in its own right" (Dunning, 2000, p. 174). In this sense, these firms take account of dynamic externalities, knowledge accumulation, and interactive learning (Sölvell & Zander, 1996; Florida, 1995), of spatially related innovation and technological standards (Antonelli, 1998), of the increasing dispersion of created assets, and of the need to conclude cross border asset augmenting and/or asset exploiting alliances (Dunning 1995, 1998).

Lastly, the results are also in accordance with both the resource and knowledge based view of the firms, in the sense that these theories defend that the innovative performance of an MNC is related to the possession of knowledge and resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991; Rumelt, 1984). In this context, the studied MNCs source knowledge from their international subsidiaries (Athreye, Batsakis and Singh, 2016; Gupta and Govindarajan, 2000), who play a major role as knowledge sources for the MNC to develop and maintain their competitive advantage (Mudambi & Santangelo, 2016).

Figure 2 - Entry mode used by the MNC in Portugal

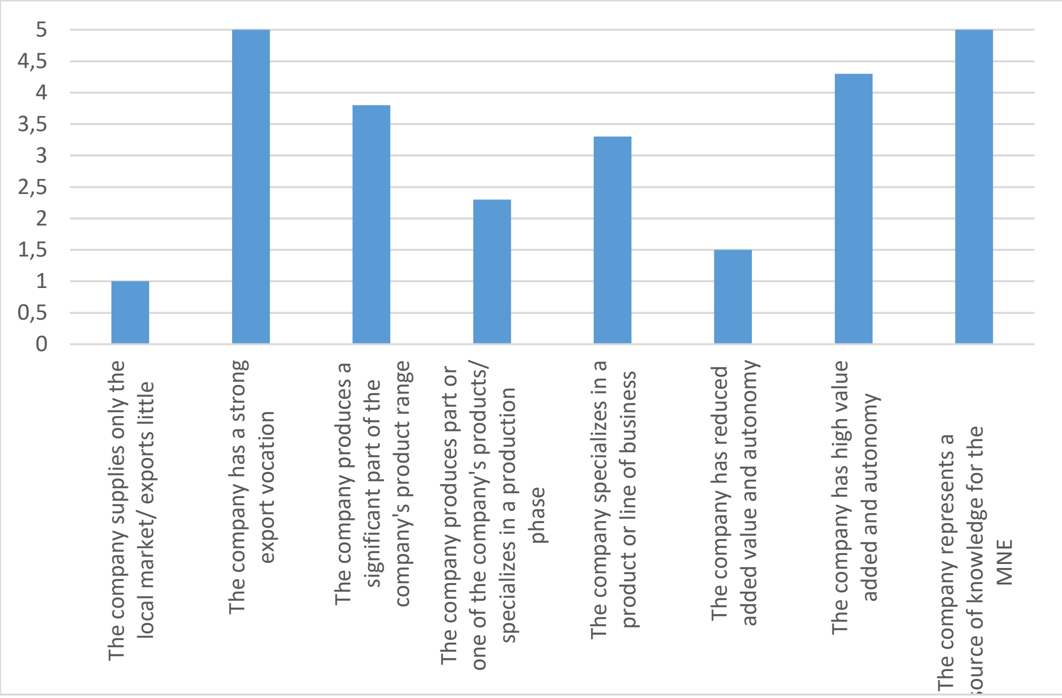


Source: Own elaboration

The following section of the questionnaire covered the topic of the subsidiary's activity. The interviewees characterized the companies as being export-oriented, as well as representing a source of knowledge to the MNC, presenting high values of value added and autonomy. In what concerns the company's product range, the results weren't as clear, with some companies positioning themselves as producers of a significant part of the company's product range and others considering that they specialize in only one product or line of business. When it comes to who is in charge of the decision making process in the subsidiary, 50% of the interviewees considered that the headquarters decide with the knowledge of the subsidiary. 25% of the interviewees claimed that the subsidiary decides with the knowledge of the headquarters, while other 25% answered that the subsidiary decides on its own.

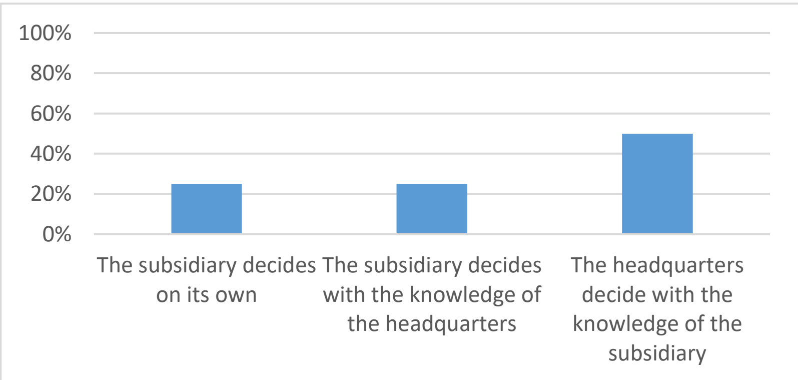
The majority of these results are, thus, in accordance with the typology envisaged by Pearce (2001), in specific with its characterization of the product mandate subsidiary. According to the author, a product mandate subsidiary is characterized by a wide market scope, having the resources and mandate to develop, produce and market the product(s) for which it is responsible. Therefore, the interviewed subsidiaries fall in that category, being characterized by their high value-added activities, contributing to the growth of the available knowledge for the MNC, to a significant and individualized extension of the product scale of the group and to play a significant role in the firm's competitiveness. On the other hand, the results regarding the subsidiary's product range and competitiveness did not testify Pearce's theory in such a clear manner. According to the author, these subsidiary types present a narrow product scope and high levels of autonomy, which was not showed with total exactness by the answers given by the subsidiary representatives.

Figure 3 - Role of the Portuguese subsidiary



Source: Own elaboration

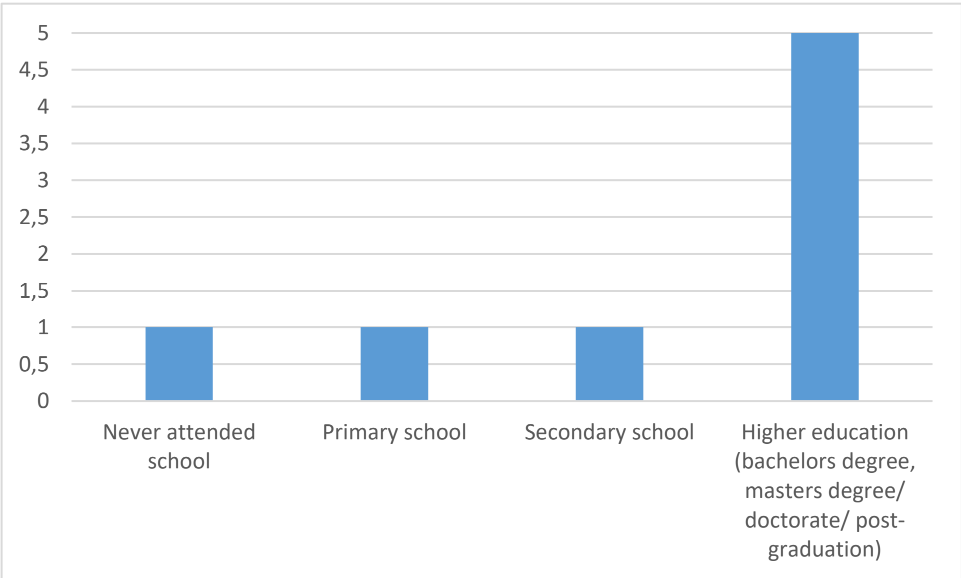
Figure 4 - Subsidiary's role



Source: Own elaboration

Regarding the subject of human capital, when asked to characterize the subsidiary employees based on their level of academic education, all interviewees stated that the majority of the workers are graduates with either a bachelor degree, a master's degree, a doctor degree or post-graduation. These findings are, thus, in accordance with the expected by the human capital literature analysed in the chapter 2.2.6 of the present dissertation, which states that the existence of a well-educated pool of labour in the host country may boost a country's attractiveness as a recipient of FDI projects (Noorbakhsh, Paloni and Youssef, 2001; Pfeffermann and Madarassy, 1992), since top educated and top skilled workers are crucial to firms' capacity to absorb and organize knowledge and to innovate. In addition, these results are also in agreement with what is stated by EY (2019) in the chapter 2.3 of the present dissertation and by the experts interviewed in the preliminary phase of these empirical analysis, who claim that the wide availability of talent is the main reason why foreign investors perceive Portugal as an attractive destination.

Figure 5 - Composition of human capital

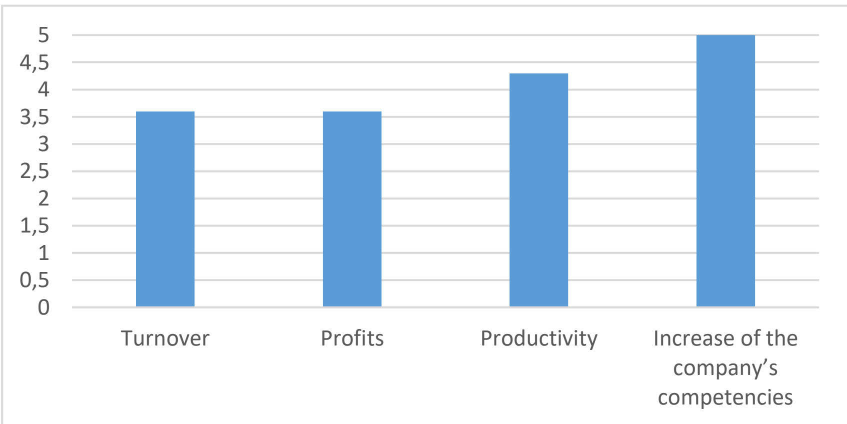


Source: Own elaboration

The final topic covered by this section of the questionnaire was related to the importance of the establishment of the subsidiary in Portugal and its consequences according to indicators such as business volume, profit, productivity and the augmentation of the company's competencies. In this sense, the augmentation of the company's competencies was considered the most significant consequence since the opening of the subsidiary in the country, with the rest of the indicators, specially the increase of productivity, following as also positive consequences.

In this context, it is possible to observe that these answers are in concordance with the theoretical frameworks analysed in the first part of this dissertation. For example, Dunning's (1993) taxonomy of motivations and, in specific, the strategic asset-seeking motivation predicts that, by tapping into skilled staff and by collaborating with advanced knowledge sources, MNCs augment their existing capabilities and acquire new ones. On the other hand, both the resource and the knowledge based views of the firm (Athreye, Batsakis and Singh, 2016; Gupta and Govindarajan, 2000) claim that subsidiaries who work as a source of knowledge for the firm play a major role in the developing of the company's competitive advantage, through the increase of its competencies (Mudambi & Santangelo, 2016). Pearce (1999) also predicts these consequences when he presents the concept of "creative subsidiary": subsidiaries that access and apply localized dimensions of knowledge and, thus, contribute to the growth of the available knowledge, consequently playing a significant role in the firm's competitiveness. Cantwell and Mudambi (2005) present a similar theory, with their concept of "competence creating subsidiaries". According to the authors, foreign subsidiaries are not only purely technological "containers" of assets transferred by the headquarters, but they can also adopt a more independent and technologically active behaviour. In recent years, it is possible to observe a closer integration of subsidiaries into international networks within the MNC (Cantwell and Mudambi, 2005), with some subsidiaries gaining a more creative role, generating new technology, using more recent technology, employing greater numbers of skilled workers and undertaking more R&D, assuming, therefore, a role of competence and innovation creation.

Figure 6 - Consequences of the subsidiary creation in the MNC

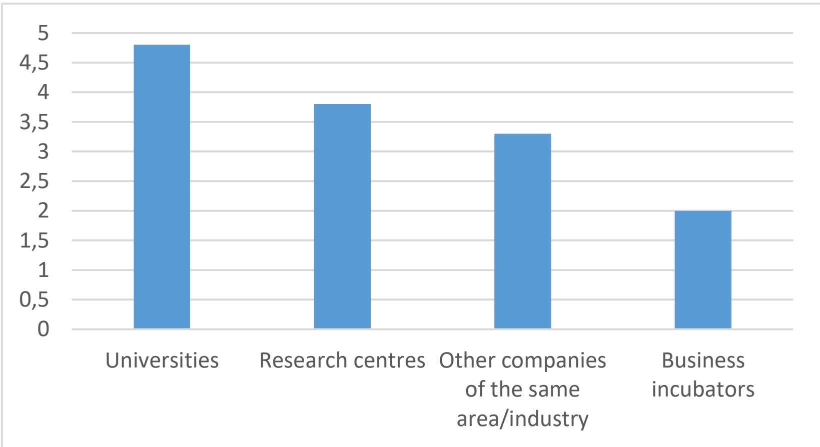


Source: Own elaboration

Lastly, the final section of the questionnaire concerned local relations and its importance for the success of the subsidiary. The interviewee considered the relationship established with local universities extremely important to the company's activity. On the other hand, relationships with the investigation institutions and other companies of the same area or industry don't play an important role for the subsidiary's success.

Once again, these results are in conformity with the claims of both the EY Survey (chapter 2.3 of the present dissertation) and of the experts interviewed (chapter 3.3.1. of the present dissertation) regarding the importance of the innovation ecosystem in the success of these subsidiaries. The cooperation with local universities as well as with research centres, play an important role in helping the company with the development of future solutions.

Figure 7 - Local relations



Source: Own elaboration

3.3. Limitations of the present research

The present dissertation was developed during a very particular and challenging context, due to the pandemic COVID-19, which started in March of the current year, exactly around the time when interview requests started to be sent to the Portuguese subsidiaries' representatives.

This pandemic context revealed itself as restraining to our research, in particular, which was dependent on the contact with specific Portuguese subsidiaries, limiting the size of our sample. In this sense, because of the fact that the majority of companies saw their activity reduced or drastically changed, it became extremely challenging and, in the majority of cases, impossible to obtain answers for our interview requests within our time limitation.

Despite the many adversities, our efforts to get positive answers were continuous, having tried to contact the targeted subsidiaries repetitive times through all the means and contacts available, such as e-mail, LinkedIn and other contacts from the subsidiary, up until the last available moment, having received positive answers from only four of those contacts.

In this context, even though these conditions were out of our control, we recognize that the obtention of interviews was severely harmed, resulting in a relatively small sample, which limits the drawing of more firm conclusions as it was desired.

4. Conclusions

In a world characterized by a deep globalization process, FDI assumes a great importance in economic growth. High value-added and knowledge intensive investments, in particular, are considered crucial for the innovation and technological development of a country, generating management know-how, labour productivity, high quality employment with high wages, among others. In this context, attracting this type of investments is a government priority.

Thus, in the last years, Portugal has seen an increase in the level of high value-added and knowledge-intensive investments made by foreign companies in the country, reason why the main purpose of this paper was to understand what motivates MNCs to invest in Portugal and what are the characteristics and strategic roles of such subsidiaries. Consequently, through the analysis of the existing theoretical frameworks related to the subject, which was later compared to the results of the empirical study, based on interviews carried out with representatives of the Portuguese subsidiaries under analysis, we were able to conduct our assessment and to answer the research questions.

Through our study we concluded that the main reason why MNCs find Portugal an attractive destination for their high value added and knowledge intensive investments is, undoubtedly, the quality of the country's human capital, which was predicted by Dunning's Motivations theory, in particular, by the author's description of the strategic asset seeking motivation. The analysed literature on human capital also anticipated that the existence of a well-educated pool of labour in the host country consists of an attractive characteristic for FDI projects, with top educated workers being crucial to firms' innovation. Other variables such as the country's socio-cultural conditions and geo-strategic position and its innovation ecosystem also proved to have a considerable importance for the success of these investments. These results are also in accordance with the analysed theoretical frameworks, in specific with the location advantages mentioned by Dunning in the Eclectic Paradigm.

When it comes to the characteristics and the strategic role of these subsidiaries, our results showed that the Portuguese companies are undoubtedly export-oriented and represent a source of knowledge for the MNC, while also presenting high values of value added and a considerable level of autonomy. In this context, our findings proved that the establishment of these subsidiaries in Portugal have a strong impact on the augmentation of the MNC's competencies. Once again, these conclusions are in accordance with the studied theory, in specific, with Pearce's characterization of "product mandate subsidiary", or, in other words, creative subsidiary, and also with Cantwell and Mudambi's concept of "competence creating subsidiaries".

After all, the main contribution of this study to literature seems to be the confirmation of the growing attractiveness of Portugal for foreign investors in the high-tech and knowledge-intensive industries, as well as the description of the country's characteristics that make for this attractiveness. It also confirms the positive impact of the opening of Portuguese subsidiaries for MNCs.

Although we seem to be able to draw clear conclusions from the conducted interviews, the truth is that the main limitation of this study stems from the fact that, due to the context of pandemic and time limitation, the sample of interviewed companies is relatively small. Thus, even though we verified through various secondary sources, as well as by the interviews to experts that the answers given are applied to the generality of high-tech and knowledge intensive foreign companies present in Portugal, we are not able to draw firm conclusions because our sample size does not allow us to establish statistic significance. Such topic warrants, therefore, further examination.

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Appendix

Appendix 1 – Questionnaire High value added and knowledge intensive investments by foreign companies in Portugal

High value added and knowledge intensive investments by foreign companies in Portugal

Responsável pelas afirmações:

Função:

A. Descrição da empresa

Nome da empresa :
Ano de início de atividade em Portugal :
Atividade principal da empresa:
Volume de negócios (milhares €/último ano disponível):
Nr. Trabalhadores inicial (aquando da inauguração da empresa em Portugal):
Nr. Trabalhadores atual:

B. Processo de estabelecimento em Portugal

B.1. Quais foram as motivações para o investimento em Portugal?
(1- Nada importante; 2- Pouco importante; 3- Medianamente importante; 4- Muito importante; 5- Extremamente importante)

		1	2	3	4	5
1.	Procura de recursos (humanos, naturais, financeiros)	☐	☐	☐	☐	☐
2.	Procura de ativos estratégicos (científicos, tecnológicos, clusters dinâmicos)	☐	☐	☐	☐	☐
3.	Incentivos ao IDE proporcionados pelo *host country* (Portugal)	☐	☐	☐	☐	☐
4.	Incentivos financeiros ou fiscais	☐	☐	☐	☐	☐
5.	Leis, impostos e regulamentos mais favoráveis no *host country* (Portugal)	☐	☐	☐	☐	☐
	Acesso a novos mercados	☐	☐	☐	☐	☐
6.	Seguir clientes/parceiros	☐	☐	☐	☐	☐
7.	Seguir concorrentes	☐	☐	☐	☐	☐
8.	Condições socio-culturais do país (Portugal)	☐	☐	☐	☐	☐
9.	Posição geo-estratégica do país (Portugal)	☐	☐	☐	☐	☐
10.	Outra (por favor especifique)	☐	☐	☐	☐	☐

B.2. Qual o modo de entrada utilizado pela empresa em Portugal?

1. Licenciamento/franchising	☐
2. Subcontratação de outrém	☐
3. Abertura de filial comercial	
a. criação de nova empresa	☐
b. aquisição de empresa já existente	☐
4. Outras formas contratuais (Contratos de gestão, Contratos chave na mão, Partilha de produção ou Alianças estratégicas)	☐

B.2.1. Quais foram as razões para a escolha desse modo de entrada?

C. Atividade da empresa portuguesa

C.1. Caracterize as seguintes afirmações de acordo com o seu grau de veracidade no que diz respeito à atividade específica da subsidiária.

(1- Nada correto; 2- Pouco correto; 3- Moderadamente correto; 4- Muito correto; 5- Totalmente correto)

		1	2	3	4	5
1.	A empresa fornece apenas o mercado local/exporta pouco	☐	☐	☐	☐	☐
2.	A empresa tem uma forte vocação exportadora	☐	☐	☐	☐	☐
3.	A empresa produz uma parte significativa da gama de produtos da empresa	☐	☐	☐	☐	☐
4.	A empresa produz parte ou um dos produtos da empresa/ é especializada numa fase de produção	☐	☐	☐	☐	☐
5.	A empresa é especializada num produto ou linha de negócio	☐	☐	☐	☐	☐
6.	A empresa tem um valor-acrescentado e autonomia reduzidos	☐	☐	☐	☐	☐
7.	A empresa tem um valor-acrescentado e autonomia elevados	☐	☐	☐	☐	☐
8.	A empresa representa uma fonte de conhecimento para a MNE	☐	☐	☐	☐	☐

C.2. Quem é o responsável pela tomada de decisões acerca do desenvolvimento e implementação das próprias competências da subsidiária?

1. A subsidiária decide sozinha ☐
2. A subsidiária decide com o conhecimento dos *headquarters* ☐
3. Os *headquarters* decidem com o conhecimento da subsidiária ☐
4. Os *headquarters* decidem sozinhos ☐
5. Outro (por favor especifique) ☐

C.3. Caracterize as habilitações dos funcionários da empresa de acordo com os seguintes indicadores:
(1- Muito poucos trabalhadores; 2- Poucos trabalhadores; 3- Alguns trabalhadores; 4- Muitos trabalhadores; 5- Maioria dos trabalhadores)

		1	2	3	4	5
1.	Nunca frequentou a escola	☐	☐	☐	☐	☐
2.	1º ciclo	☐	☐	☐	☐	☐
3.	2º ciclo	☐	☐	☐	☐	☐
4.	3º ciclo	☐	☐	☐	☐	☐
5.	12º ano de escolaridade	☐	☐	☐	☐	☐
6.	Ensino superior					
	a) Licenciatura	☐	☐	☐	☐	☐
	b) Mestrado/ Doutorado/ Pós-graduação	☐	☐	☐	☐	☐
7.	Outro (por favor especifique)	☐	☐	☐	☐	☐

C.4. Classifique a importância e as consequências do estabelecimento da empresa em Portugal no que diz respeito aos seguintes indicadores:
(1- Muito negativas; 2- Negativas; 3- Neutras; 4- Positivas; 5- Muito positivas)

		1	2	3	4	5
1.	Volume de negócios	☐	☐	☐	☐	☐
2.	Lucros	☐	☐	☐	☐	☐
3.	Produtividade	☐	☐	☐	☐	☐
4.	Aumento das competências da empresa	☐	☐	☐	☐	☐

D. Relações locais

D.1. Classifique a importância dos seguintes tipos de instituições para o sucesso e progresso da subsidiária:

(1- Nada importante; 2- Pouco importante; 3- Medianamente importante; 4- Muito importante; 5- Extremamente importante)

	1	2	3	4	5
1. Universidades	☐	☐	☐	☐	☐
2. Centros de investigação	☐	☐	☐	☐	☐
3. Outras empresas da mesma área/indústria	☐	☐	☐	☐	☐
4. Outro (por favor especifique)	☐	☐	☐	☐	☐