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Internationalization of Photovoltaic Consultancy in the Indian Market: A case study analysis

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Abstract

In recent years, the service sector is showing a leading role on the global scene, giving rise to the so-called phenomenon of Knowledge-Intensive Economy. In this context, Knowledge-Intensive Business Services (KIBS), i.e. B2B institutions that provide various types of services related to emerging technologies, play a critical role. The internationalization path of these firms cannot be described through traditional stage theories, as their specificities lead them to the adoption of a born global approach. Their services, indeed, often target niche markets and require a worldwide exploitation of knowledge and competences at a rapid pace, in order to reduce the risk of technological obsolescence.

Current literature on KIBS internationalization is still limited and leaves many aspects understudied. Particular attention should be addressed to the challenges these agents face when approaching emerging markets: although the latter offer great revenues generating opportunities, they still significantly differ from developed countries as far as their cultural, administrative, geographical and economic environment is concerned.

This dissertation focuses on photovoltaic consultancy as the typology of KIBS under study, and aims at contributing to literature development through the analysis of the main barriers and enablers that are encountered when these service providers approach emerging markets. The research is based on the case study of an Italian company, interested in expanding within the Indian market. Through the adoption of an embedded case study design, this dissertation investigates the sector, the service offering and the company, with a focus on the choice of the target country, the relevant business environment and the factors influencing customers' adoption decision. Based on the case study findings, suggestions and advices on the internationalization strategy of the case study company are provided.

Keywords: KIBS, Photovoltaic Consultancy, India

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Chapter 1 – Introduction

1.1. Background

Market liberalization, globalization, information and communication technologies are just some of the factors considered responsible for service firms' large international presence. In particular, recent years have seen the emergence of Knowledge-Intensive Business Services (KIBS) on the economic scene, which are "*institutions that promote the generation, diffusion and accumulation of knowledge within economic systems"* (Miles, Kastrinos & Flanagan, 1995, p. 10). These firms distinguish themselves from others for the key role that human capital plays in comparison to more traditional dependence on financial capital or labour. Moreover, their services offer important inputs to firms of all sectors, working both as sources of knowledge and technological transfer. The knowledge embedded in these services is, in fact, dynamic in its formulation, as it represents an active process, in which not only the ability to organize information is needed, but also the ability to apply it identifying and solving problems (Alvesson, 1995).

KIBS have caught the attention of researchers and scholars for several peculiarities, starting from the importance that client – professional interactions have on innovation development (Tordoir, 1994), to the crucial role of networks in their internationalization process (Miles, 2003). KIBS's emergence is mainly due to the growing demand for external services coming from firms, which require always higher specialization. Therefore, these firms establish their businesses on niche sectors, highly investing in R&D and following demand at a worldwide level. This constraint imposes on them to internationalize their operations at a rapid pace, in order to exploit know-how before technology obsolescence. This approach toward foreign countries is not consistent with traditional stage approach theories (Vernon, 1966; Johanson & Vahlne, 1977), which describe internationalization as an incremental process, characterized by a gradual and progressive commitment. KIBS, instead, tend to show a born global approach (Bell, McNaughton, Young & Crick, 2003), as their growth opportunities cannot be found in a unique market and, thus, they perceive the whole world as their marketplace.

However, concepts typical of traditional wisdom, like those of psychic distance, liability of foreignness and liability of outsidership (Johanson & Vahlne, 1977), have to be reconsidered and analysed in the light of this peculiar internationalization path. Their importance is crucial especially when KIBS target emerging markets, which represent the focus in this dissertation.

1.2. Research Problem

Internationalization of KIBS is a very complex and broad field of analysis, which can difficultly be correctly evaluated adopting a general perspective. According with this, much of the researches conducted on the topic in the last few years have focused on specific industries and/or countries,

leading to numerous studies aimed to identify, describe and explain sector's challenges only in reference to specific target markets or technological fields. Clear examples are offered by Styles, Patterson and La (2005), who analysed 17 Australian KIBS with operations established in southern Asia, another example is represented by Brouthers, Brouthers and Wernel (1996), who focused on computer software industry with United States as home market, while Agarwal and Ramiswami (1992) investigated the US equipment leasing sector. In line with this, several scholars have claimed that more research is needed in specific professional service sectors, in order to better understand how firms operate in each particular setting (Coviello & Martin, 1999).

In fact, KIBSs' necessity of early and quickly establishing operations abroad to maximize their profit potential makes their internationalization process describable by the born global approach (McDougall & Oviatt, 1994). Founding assumptions of this theory are the homogeneity of clients' needs among countries (Jolly, Alahuta and Jeannet, 1992) and the smoothing role of networks on experiential learning development and foreign markets entrance (McDougall & Oviatt, 1994). The perception of limited barriers to foreign market expansion leads KIBS to often underestimate the cultural and market differences that characterise each country, considering technical sectors not heavily affected by their influences (Patala, 2008). These considerations are extremely risky especially when approaching emerging markets, as differences in terms of market structure and service preferences highly affect the rate of KIBS success. More than that, other less industry specific features, like geographic, political and administrative environment may represent barriers to straightforward internationalization.

To date, only few studies have addressed the issues faced by KIBS when expanding in emerging markets and resulting conclusions report that local clients are often unable to grasp the potential of knowledge-intensive service providers, because of their immaturity from the technological point of view or their cultural predisposition to reject some services (Wang, 2007).

In order to investigate the extent to which emerging markets present greater challenges than developed ones, this dissertation has selected a specific typology of KIBS that endorses most of the features described in the literature. The industry selected is that of Photovoltaic consultancy, whose internationalization process and business structure has never been investigated.

1.3. Purpose and Research Question

On the basis of the above discussion, the aim of this study is to contribute to literature development through the analysis of the main barriers and enablers that are encountered by PV consultancy when expanding in emerging countries, focusing the attention in particular on the Indian market. Thereby, through the presentation of a case study company and the analysis of several units within it (Yin, 2003),

respectively the firm management system, the company agent in India and four firms representing potential typologies of clients, the dissertation aims to answer the following research question:

How do KIBS internalize in emerging markets?

Through the adoption of an embedded case study design, this dissertation investigates the PV consultancy sector, the service offering and Synertechnik, the selected case-study KIBS, with a focus on the choice of the target country, the relevant business environment and the factors influencing clients' adoption decision. This peculiar structure has been selected as it allows to understand and grasp the whole picture in the organization, leadership process and within international relationships, as it is adopted when "*a single case study may involve units of analysis at more than one level*" (Yin, 2013, p. 62).

Conclusions reached for the selected industry are then extended to KIBS sector through the development of an analytical framework, which represents a first attempt to understand which are the main determinants that affect strategic decisions when doing business in emerging markets, instead than in developed countries.

Chapter 2 - Literature Review

2.1. Stage approach theories

After the Second World War, firms' expansion into foreign markets has increased dramatically. This phenomenon has been extensively analysed, giving rise to numerous theories aimed to identify and describe internationalization paths.

The Product Life Cycle Model (Vernon, 1966, 1979) and the Uppsala Model (Johanson & Vahlne, 1977) represent traditional approaches of the International Business School, which are usually referred as "*Stage approach*" theories, as they consider internationalization a linear and gradual process. The patterns described are depicted as "*rings in the water*" (Madsen and Servais, 1997), in order to highlight their progressive nature.

2.1.1. Product life cycle

The 20th century saw the emergence of a new economic phenomenon whereby the United States, traditionally recognized as driver of technological innovation, started importing many products they had originally developed. Raymond Vernon (1966) tried to explain what was happening introducing a model that connected the internationalization pattern of organizations to the stages of product development.

In particular, the so-called *product life cycle theory* identifies three stages: introduction of a product, maturing phase and standardization phase.

Observing the U.S., Vernon saw that the introduction of a new innovative product usually starts from the market where the producer operates. This happens mainly because managers are myopic and they are not able to grasp the needs of foreign customers; more than that, responsiveness and consciousness of local opportunities are strongly connected with ease of communication and geographical proximity. The elaboration of new products is then typical of developed countries, because inputs for ensuring a rapid adaptation to customers' needs are there easily available. In this phase, marginal consideration is instead given to production costs, due to the need of safeguarding flexibility and facilitating communication between production facilities and headquarters, and also between final consumers and inventors.

In the early stages production is almost exclusively absorbed by domestic market, only the surplus is destined to other developed countries in the form of exportation. Though, when product starts to mature, demand in foreign markets increase and competitors show up transforming costs in key variables. Changing market conditions represent a triggering event that forces the producer to consider the establishment of a production facility in the foreign market. The decision is dependent on

the producer's ability to correctly estimate the potential of the new market and the costs connected with FDI: analytically, he should continue the export behaviour until the marginal production costs in the home country, plus the transportation costs to the foreign markets, and the duties connected to it, are lower than the full cost of prospective production in the market of importation.

The same evaluation is made in the third stage, when product and production procedures are standardized and price becomes the main competitive tool. In this situation, underdeveloped countries represent low-cost manufacturing suppliers and offer a clear competitive advantage thanks to their great potential for economies of scale. The new production facilities enable the producer to remain competitive in a market that is now saturated and characterized by strong price competition. Indeed, the innovating county becomes an importer as the only way to maintain its market share.

The complete product life cycle is therefore highlighting that demand and production costs evaluations are the factors determining the timing of foreign expansion, explaining how and why firms should decide to internationalize moving from an exporter profile to a foreign direct investment.

2.1.2. Uppsala Internationalization Model

During the 1970s some researchers in the Uppsala University focused their attention on a group of Swedish manufacturing firms with the aim of conceptualizing their internationalization path. Under the influence of Aharoni's seminal study (1966), Johanson and Vahlne (1977) published in the *Journal of International Business Studies*[1] an innovative model, identifying in the knowledge of foreign markets and operations the explanation of the gradual internationalization of firms.

The researchers recognize that firms usually follow four steps when going abroad: at the beginning, firm approaches the market through sporadic exportation, this provides good knowledge of size and nature of the market, but it also allows the identification of local agents for additional further sales. From this point an increasing involvement could be planned, as the firm can decide to move from a figure that is independent from its control, to a more stable presence, like a completely owned sales subsidiary. Some marginal operations, as repairing, assembling or packaging services, are therefore managed locally in a gradual manner, until a more integrated manufacturing plant is established.

In addition, the establishment chain usually starts from those markets that present a low psychic distance from the home county. The concept of *psychic distance* has here been presented for the first time, moving beyond the traditional limit of physic or geographical distance and considering also all those culture-driven factors that could represent possible barriers to a smooth exchange of information between countries, like for example language, education, political environment and

[1] Johanson J., Vahlne J.E., (1977), *The internationalization process of the firm-A model of knowledge development and increasing foreign market commitment*, Journal of International Business Studies, Vol. 4, pp. 20-29.

business practices. The larger the lack of knowledge of these peculiarities, the larger the costs faced by foreign firms respect to local ones. All these costs are described by the concept of *liability of foreignness*, which will be explained in more detail in the next paragraph. In the light of this, firms start internationalize from those markets that are closer because there the perception of uncertainty is lower and they are easily able to identify and grasp opportunities.

The dynamism of the model is explained through the interaction between two categories of variables: "*State Aspects*" and "*Change Aspects*". The former aims to explain the state of internationalization in terms of resources committed to the foreign market (*market commitment*) and the knowledge possessed by the firm at one time (*knowledge commitment*); the latter refers to the way the firm exerts its internationalization path, focusing on current business activities and commitment decisions.

The key to success is represented by knowledge, a concept composed by several definitions, in which it is important to distinguish between *objective* and *experiential knowledge*, *general* and *market specific*. While objective knowledge could be transferred and taught, experiential knowledge can just be learnt through personal experience, that requires huge amount of time to be built and plays a fundamental role in driving the internationalization process in its early stages, when routines are not already created. Day by day, personnel gains experience that is essential to perceive market opportunities and to find out solutions to emergent problems. In this regard, it is important to point out that knowledge may be described as general, when it refers to operational methods and can be transferred from one country to another, or it can be defined as market-specific, if it regards a particular national market. Despite they are both fundamental to succeed abroad, market-specific knowledge needs a market-related experience to be gained, while the other can be easier exploited for the whole internationalization path once it has been acquired. As the learning process is time-consuming, the process of internationalization will inevitably be slow, characterized by a continuous adaptation to the changing situations the firm faces, instead than on the basis of a deliberate strategy (Knight & Cavusgil, 1996).

Depending on how market problems and/or opportunities are perceived, commitment decisions are taken while considering the operations currently performed on the market. Each additional commitment has an economic and an uncertainty effect, as it implies an increase in the scale of operations on the market, but it also increases the uncertainty due to a lack of complete information. For this reason, authors state that firms increase their commitment by small steps unless they have large resources, or they perceive low market uncertainty thanks to a stable market condition or an extensive experience gained by the firm in similar environments.

2.1.3. Liability of Foreignness

International Business literature has traditionally explained and theorized the process of internationalization as slow and characterized by a sequential pace due to the complexities that firms face when going abroad (Vermeulen and Barkema, 2002). The factors that determine slowness are summarized by the concept of "*Liability of Foreignness*", firstly introduced by Hymer in 1960 to indicate the unavoidable costs and disadvantages faced by firms when entering a foreign market.

Studies have long highlighted potential benefits of an international expansion, mentioning, to name a few, tax benefits, sources of low-cost labour (Vernon, 1966; Hennart, 1982), sales increase, spreading of R&D and marketing costs (Franko, 1980). Though, the advantages taken from internationalization are constrained by the firm's ability to deal with the complexities it faces in the foreign market (Vermeulen & Barkema, 2002). Considering a new institutional and cultural setting, and the necessity of adapting to the different business environment (in terms of processes and organizational structures), traditional literature decrees that time represents a fundamental factor for handling complexities (Vermeulen & Barkema, 2002).

Zaheer (1995, 1997, 2002) identified four main sources of liability with the aim to distance the concept from the most traditional market-driven sense[2] and focus on the broader range of interactions firms face in the local environment. *Spatial distance* is presented as the first barrier, as it implies costs of travel, transportation and the coordination expenses faced when dealing with markets located in different time zones. A more general concept is then presented referring to all those costs that are "*firm-specific*", due to the unfamiliarity with the local environment. These two sets of complexities emphasise the "*structural/relational costs*" of doing business, as firms approaching a foreign market have less access to local information and resources than a local firm. On the other hand, there are then "*institutional costs*", which represent a broader category that aims to describe all the *home-country* and *host-country costs* related to culture, politics, ideology, law and the other social institutions that have some sort of implications on the way the foreign firm will be perceived and accepted in the foreign market. More than that, institutional costs determine the learning process a firm should have to engage in order to overcome differences.

Costs connected with liabilities have mainly been analysed in relation to Multinational Enterprises, in particular the effect has proved to be more pronounced on "*Horizontal MNEs*" (Caves, 1982), which are foreign facilities established abroad in order to manufacture or sell products or services in an almost standardized manner. Despite "*Vertical MNEs*" that organize subunits on a worldwide base as

[2] In the discussion about which costs mostly impact the decision of doing business abroad Kindleberger (1969) and Caves (1982) adopt an economic approach focusing on market-driven factors.

different stages of an integrated value-adding system, Horizontal MNEs face higher difficulties as they compete on a *local-for-local basis* (Bartlett & Ghoshal, 1989).

Another important aspect that has been questioned when dealing with liability is the kind of criteria a firm should present in order to be labelled as "foreign". Even if some cultural aspects, like how customers perceive the firm, has been mentioned, the majority of factors considered as identifiers are the location of headquarters, the nationality of owner (Zaheer & Masakowski, 1997) and the nationality of the majority of employees (Reich, 1990). In general, the definition of foreignness should be deducted from the industry context, for example, in the case of Zaheer and Masakowski's (1997) analysis of trading rooms, the focus has been placed on the nationality of controlling ownership (that is the nationality of shares' owners). The case they presented has important implications as that industry is characterized by high regulation and standardization worldwide, so it should not be subjected to important liability effects. Nonetheless, the authors proved that even this sector suffers additional costs when approaching a foreign market, more than that this liability tend to evolve through time.

The changing nature of liability has been presented also by the Uppsala Model, which considers additional knowledge as the enabler to overcome costs and difficulties. Indeed, market commitment increases in a gradual and sequential manner in line with the progressive acquisition of additional knowledge. Similar conclusions have been reached also by Chang (1995) through a study on the entry process of Japanese electronic manufacturing firms into the United States' market, during the period 1976-89. In the path identified by him, firms entering foreign market focussed on the business in which they had a competitive advantage over local firms and, only once they had gained extensive experience in the external environment, they decided to diversify into non-core areas.

The assumption that knowledge acquired through time makes it possible to rule liability of foreignness has then be supported by the idea that customers' acceptance of foreign products or services evolve over a period of time. Scott (1995) explained that people tend to become acquainted with the presence of a foreign company as time passes and this creates a sort of legitimation process for the firm.

Tests conducted by Zaheer (1997) on a sample of currency trading rooms for twenty years demonstrated that the liability faced by foreign firms after sixteen years was disappeared, as their exit rate was equal to that of local firms. Therefore, to overcome liability firms are expected to enter new markets in a gradual manner, at a slow pace (Vermeulen et at., 2002), encouraging in this way learning processes and triggering acceptance process.

The concept of liability of foreignness has recently been integrated in the Uppsala internationalization process revised (Johanson & Vahlne, 2009) with the introduction of the concept of liability of outsidership. With a renewed interest toward the role of network in the internationalization process,

the concept of outsidership represents a new typology of complexities that firms face when doing business abroad, due to the absence of trusted relationships in the foreign country. Markets can, in fact, be described as "*more or less stable networks of business relationships*"[3] (Forsgren & Johanson, 1992, p.5), where every firm has direct and indirect links with other entities and resulting relationships have strong implications on their further expansion in terms of market selection and entry mode (Coviello & Munro, 1995; 1997). The network approach is taking hold because traditional distinct roles in market place are becoming mixed, leading to continuous cooperation between customers, suppliers and competitors (Forsgren & Johanson, 1992). In this setting, business activities are always more interrelated and the outcomes of some firms are often dependent on the performance of others. These interdependences lead actors that control activities to establish close relations with each other, as the potential gains they can obtain are higher than those reachable through arms-length market relations. In fact, cooperation allows activities to be modified in order to meet each other's needs, and relationships can be established or dismissed on the basis of each actor's willingness of engagement (*Ibid*). Business networks can, thus, be described as "*sets of connected exchange relationships between actors controlling business activities*"[4] (Forsgren & Johanson, 1992, p.5), which are different from social networks, but with which they share some common aspects in terms of interactions. Even if business networks are developed to strength business interests, they are not based on formal contracts, but are driven by social interactions (*Ibid*). The resulting business relationships are difficult to be grasped from outsiders and, even if they all have a common basic nature, they generally differ whether they are domestic or international, they refer to different product type, production technology or market structure (Hallèn, Johanson, Seyed-Mohamed, 1987). Independently from their peculiarities, these relationships represent an important intangible asset for firms, as they allow knowledge development, not only in the traditional passive way of learning from others, but through an on-going process of learning through interactions (Johanson & Vahlne, 2009). Therefore, difficulties internationalizing firms face in foreign markets are not only due to mere lack of institutional market knowledge, but result from the absence of a position in the local network, leading to liability of ousidership, rather than foreignness. The network has, in fact, a crucial role in the firms' possibilities and competences, as local embeddedness lead to higher ability to grasp opportunities and easier development of foreign operations (*Ibid*). Thus, internationalization from a network perspective means that firms do not expand abroad only to exploit a firm-specific asset, but they do it also to reach foreign demand and handle relations with foreign networks (Forsgren & Johanson, 1992).

[3] Forsgren M., Johanson J., (eds.), 1992, Managing Networks in International Business, Philadelphia, Gordon & Breach, chap. 1.

[4] Forsgren M., Johanson J., (cf. Cook & Emerson, 1984), 1992, Managing Networks in International Business, Philadelphia, Gordon & Breach, chap. 1.

Network embeddedness has to be distinguished between "*structural*" and "*relational*" (Dacin et al., 1999): while the former determines "*whom one knows*" (Moran, 2005) and represents the advantage a firm may gain from its position within the network, the latter explains "*how well one knows them*", explaining the extent to which close relationships offer access to learning opportunities and exchange of information (Gulati, 1998).

Structural embeddedness provides different advantages depending on whether networks are open or close (Burt, 1992). Being part of open networks facilitate the discovery of opportunities (Zaheer & Bell, 2005) as more information can be analysed, offering the possibility of connecting several networks with similar structure. In case of close networks, instead, firms' advantage is based on the social capital created in a close-knit group (Gargiulo & Benassi, 2000), that reduces the risks of developing and conducting business operations abroad, as relations are tighter and, thus, characterized by lower risk of opportunistic behaviours (Walker, 1997). Therefore, there is a strong link between ability to develop opportunities and relational embeddedness, as the former lead to deep relations, characterized by trust and mutual dependence. In this setting, information is freely transmitted and people believe in them, leading to higher levels of innovation (Moran, 2005).

The firm existing network offer, thus, important information about the advantages or disadvantages the firm has in reference to local markets. In fact, while looking at the kind of relationships the firm has with actors within its network and with those of foreign ones, it is easy to understand how tough would be for it to overcome its liability of ousidership. In general terms, it has been demonstrated that in those cases in which business relations are open and/or arm's length, liability faced is lower (Forsgren, 2016).

All the difficulties that traditionally characterize the concept of "*foreignness*" can, thus, be reduced through close relations with customers and suppliers in the target foreign market (Johanson & Vahlne, 2009), which play a key role in particular during development phase, as this is the moment in which firms more need to establish links with local sources of knowledge and inputs to develop competences (Forsgren, 2016).

2.1.4. Limitations of the Stage Approach

The process of globalization has brought with it enormous changes both at a business and at a cultural level. Telecommunications, transportation and production technologies have been the main driver of change, leading to a different conception of firm internationalization. In this respect, traditional stage approach theories, developed in the 1970s-1980s, have been challenged by the new business environment and are now extensively questioned.

As said before, an important assumption of the U-Model establishment chain is that decision maker strives for keeping risk at its minimum level. This explains the gradual and progressive path theorized, but it is inconsistent with the current state of the world, characterized by continuous disruptive innovations that make playing safe the riskiest choice for a firm (Godin S., 2003). Today, firms that want to maintain their market share are supposed to constantly innovate themselves and take over customers with ideas that spread, which means in a risk-taking manner (*Ibid*). Nonetheless, it is not only the competitive environment that has changed, but the Information & Communication Technologies introduced have overthrown the way in which customers make their choices and evaluate products and services. As information can be easily accessed through Internet, people do not make their purchase-decisions just on the basis of price or quality considerations, but they take into account perception of value (Doole I. & Lowe R., 2008).

Culture, politic, society, market and technology are far away from the background that was considered when traditional theories were developed and, in light of this, it is necessary to look at all the limitations they present.

Evidence shows that today firms do not internationalize, but they born global. The slow pace of internationalization has long been studied by Vermeulen and Barkema (2002) as a *condition sine qua non* for a profitable international expansion. In particular, researchers said that a fast growth does not allow the establishment of appropriate structures and models for exploiting all the learning and adaptation opportunities offered by the foreign market. The same argument was also applied to the rhythm at which firms establish subsidiaries abroad and to the geographic scope they chase. Even if these hypotheses have been confirmed fifteen years ago, they are not consistent with the modern phenomenon of start-ups. The current state of the world imposes on firms to internationalize, transforming in a necessity what was basically a choice (Zohari,2008).

A more accommodating approach between the two perspectives is, instead, offered by Pedersen and Myles Shaver (2000), who took into account all the difficulties that firms face during expansion and stated that these affect only the initial "*Big Step*". In fact, authors said that long periods of time are needed only when firms organize and develop the first internationalizing investment, as this represents the real challenging step toward the unknown. Further expansions, instead, are not characterized by the same difficulties and require, thus, lower commitment and time. Evidence was provided by the analysis of 176 Danish firms, who took on average thirty years to develop business operations abroad for the first time, while less than 7.5 years were needed to make subsequent steps. Furthermore, the difficulties to overcome do not change according with the closeness or psychic distance between the home and foreign market, but represent the fixed cost of adaptation of the management system toward international operations. Therefore, firms that rely on traditional stage theories show skepticism toward far and culturally distant countries, which, in turn, often lead to the

decision of investing in proximal markets even if they have lower expected returns than more distant ones. Thus, following "*Big Step Hypothesis*" internationalization must be seen as a discontinuous process and not as an incremental one (Pedersen & Myles Shaver, 2000).

Another limitation is represented by the strict focus on manufacturing (Zohari, 2008), a sector that has been exceeded by the service one in the digital era. The internationalization path of service industry was not considered by stage approach theories, a drawback that cannot be unheeded today, in particular because most of these firms are concrete examples of an immediate worldwide diffusion. An important confirmation of it comes from the study conducted by Sharma and Johanson (1987) that demonstrated the invalidity of the Uppsala model for a group of Swedish technical consultants. They proved that the interplay between resources commitments and experiential learning was not demonstrated true for service firms, probably due to the natural differences of the resources used in this industry compared to those of manufacturing sector.

In addition, innumerable firms are developing a tendency to *leapfrog* stages (Hollensen, 2007) expanding since the beginning in markets that are characterized by high psychic distance. Evidence of this was presented by Nordström (1990), which observed that contemporary Swedish firms tended to establish their sales subsidiaries starting from United Kingdom and Germany, instead of considering their neighbourhood Scandinavian countries. Furthermore, entry mode choice is not in line with the predicted path of the Stage approach theories anymore: exportation is not considered the safest and unavoidable option for early stages, and the possibility of leapfrogging it is increasingly evaluated. Welch and Loustarinen (1988) showed that firms are able to undertake an immediate foreign investment in a new market once they have learned how to use the different operations' methods, confirming the importance of knowledge, but discounting the market-specific one.

Despite the severest critiques come from the observation of the business environment, International Business theories has been subjected to negative comments also from the theoretical perspective. In particular Petersen (2003) described the Uppsala Model as too deterministic, as firms do not follow a systematic, ceaselessly path from an absence of involvement to a final FDI decision (Knight & Cavusgil, 1996). The model does not take into account the importance of strategy-making, in fact it focuses on information acquisition and market commitment without consideration for the strategy formulation in which firms tend to invest much energy (Douglas & Craig, 1989). The decision on which market to extend to should be mapped out evaluating market-potential and the resources available (Cavusgil & Zou, 1994). More than that, the emergence of proactive and reactive motives[5] lead companies to

[5] Svend Hollensen (*Global Marketing*, Pretince Hall, 2007, pp. 42-48) distinguish internationalization motives between *Proactive* and *Reactive motives*. The former represents the desire of firms to exploit their unique competences or a market opportunity (like for example profit and growth goals, managerial urge, technology competence), the latter indicates the needs to react to external pressures, in order to not succumb to the threats

discount psychic distance in light of the important goals they have targeted. In particular, firm-specific characteristics, like the managerial attitude, personnel motivation and behaviour, have never been mentioned in the literature (Reid, 1984; Hollensen, 2007), losing sight of important firms' internal factors that can explain the course embarked.

Another missing topic is the impact that government regulations regarding tariffs and other trade barriers can have on the possibility and the way of entering certain foreign markets. Even if knowledge of them is considered fundamental to profitably access new countries, there is not an evaluation of firms' reaction to them. For example, the removal of trade barriers in a specific country may encourage companies to enter it at a speed and at a degree of commitment that it is far from that described in the traditional models (Knight & Cavusgil, 1996).

The determinism critique has been moved also against the entry-modes presented, which are considered extremely limited as they do not consider different options, like franchising or strategic alliances (Doole & Lowe, 2008). In addition, it is not clear why exportation should be the preferred entry mode (Carstrairs & Welch, 1982/1983) when evidence suggests that many industrial firms prefer initial involvement through international networks (Hakansson, 1982), which are characterized by low level of resources commitment as well.

Even Srilata Zaheer (2002), one of the staunchest supporter of the liability of foreignness concept, lined up against the deterministic nature of the Uppsala Model, declaring that the initial stages of licencing or agency do not allow the inception of a learning process. This is due to the "*opportunism and moral hazard issue involved in any agency relationship*"[6] (Zaheer S., 2002, p.352) that compromises the possibility of acquiring knowledge about the foreign market.

One more particular case of contradiction with traditional theories is represented by the internationalization path followed by firms form emerging economies. Tsai and Eisingerich (2010) observed that stage-approach theories analysed Western companies' behaviour, which is extremely different from that undertaken by firms from emerging markets in the last few years. The latter are, in fact, latecomer in the international scene and have to exploit their weak (if any) home-base advantage[7] at a faster rate, adopting the so titled "*spring-board*" approach (Luo & Tung, 2007). In order to catch up incumbents, these firms do not follow the establishment chain, but they expand simultaneously in more countries adopting high-risk and high-control entry mode. As demonstrated by Rui and Yip's (2008) study of Chinese firms, they often prefer cross-border adoption instead than a more gradual

faced in the home or the foreign market, changing the strategy (some example could be cases of market saturation or competitive pressures).

[6] Zaheer S., (2002), *The Liability of Foreignness, redux: A Commentary*, Journal of International Management, Vol. 8, pp. 351-358.

[7] Western components, semi-products and final products are often produced in emerging economies to exploit low-costs, but foreign firms face higher difficulty than local firms also from the supply side.

and sequential international expansion. This behaviour suggests that these firms do not face liability of foreignness, in fact they tend to internationalize first in Europe and North America, rather than in other closer countries (Luo & Tung, 2007). Attenuation of psychic distance could result from the huge amount of inward FDI that is characterizing their home countries, or from the desire of firms to connect with host countries' experts instead than participating in ethnic networks[8] (*Ibid*). Independently from the real facilitating factor, firms from these countries expand abroad looking for profit opportunities and committing large amount of resources since the early stages. They still consider learning and international experience important enablers, but their hurry to overcome the disadvantaged position occupied in the international scene impose on them an aggressive path (ibid). This approach toward internationalization is clearly incompatible with stage theories, but a unique comprehensive theoretical framework, able to describe their behaviour, has not already been reached. One of the most accredited theories say that emerging market firms undertake acquisitions in foreign developed markets (the so-called "*upmarket acquisitions*", Ramamurti, 2009) to gain access to the traditional advantages they otherwise lack (Mathews & Zander, 2007). As proprietary technologies and brands are generally missing in emerging markets (Dunning et al., 2008), local firms are often perceived as units without valuable advantages compared to competitors from developed markets. From this perspective it seems clear that firms engage in far-reaching acquisitions with the aim of gaining access to competitive advantages (Budhwar, Varma, Katou, & Narayan, 2009). Their strategies are, thus, said to be augmentative rather than exploitative, as motivations of cross-border acquisitions are that of acquire knowledge and resources that are not available in the market, instead than exploit firm-specific advantages (Hoskisson, Kim, White, & Tihanyi, 2004).

All the above-mentioned discussions demonstrate that knowledge still represents an essential element to overcome the differences between countries and to integrate correctly in a foreign market, but the step-by-step approach combined with a slow pace of internationalization cannot work for contemporary firms, explaining the emergence of new innovative theories.

2.2. International Entrepreneurship

In response to the numerous limitations that stage approach theories have been addressed, a new school of thought has emerged: The International Entrepreneurship (IE). Traditionally, foreign expansion has been the focus of the International Business literature, which has analysed in deep the role played by large Multinational Enterprises. Conversely, Entrepreneurship School focused on

[8] Ethnic networks have traditionally been considered a fundamental part of emerging markets firms' internationalization, but in current years their importance has been overwhelmed by the objective of gaining a global positioning (Luo & Tung, 2007).

venture creation and the role played by Small and Medium Enterprises in the domestic market (McDougall & Oviatt, 2000). Though, the changing conditions at global level and the discovered phenomenon of SMEs approaching the international scene since their inception (the so-called "*Born Global*") eroded the boundary between the two topics.

A common approved definition of its domain has not already been reached, as it has been subjected to innumerable interpretations moving from a strict focus on international activities of new venture (McDougall, 1989), to a broader general perspective due to the rapid evolution of the topic of inquiry (Gianmartino, McDougall & Bird, 1993). A weak agreement has been reached in identifying IE as a *multidimensional concept* (Knight, 1998), which takes in consideration innovation, proactive behaviour and risk-seeking actions (Covin & Selevin, 1989).

Building on the debate, next sections investigate the Born Global phenomenon, emphasizing the numerous studies that led to its discovering, its distinctive feature and how this emergent literature can be reconciled with the traditional Stage approach.

2.2.1. Born Globals

Since the late 1970s, Small and Medium Sized Enterprises have been extensively studied from numerous researchers interested in investigating the new subjects of internationalization paths. Firms involved in the emerging phenomenon have been labelled in different ways creating little clarity along the lines of nomenclatures. Lindquist (1991) talked about *Infant Multinationals*, while Jolly, Alahuta and Jeannet (1992) described the firms as *High Technology Start-ups*. Successively, they were called *Born Globals* by Rennie (1993), Knight and Cavusgil (1996), Madsen and Servais (1997), while *Instant Internationals* was the term used by Preece, Miles, Baetz (1999) and Fillis (2001). More recently, they are referred as *Early Internationalizing Firms* (Rialp, 2005) or *Global Start-up* (Kinght and Cavusgil, 2005).

Although the debate on the denomination started around 1990s, the phenomenon has been recognized many years before, in fact one of the first article on the theme was published by Buckley et al. in the 1979. The study conducted observed that many UK firms used to approach foreign market while establishing local manufacturing facilities since the beginning. More than that, some of the countries entered by the UK firms were Australia and South Africa, markets that are characterized by high geographic and psychic distance. This opened the doors to further researches: in 1982, Garnier investigated distinctive features of a sample of 39 firms that had embarked an internationalization process. He discovered that those companies that had set operations abroad since their inception were characterized by the presence of a proactive entrepreneurs, with a global mind-set.

Additional confirmation of the phenomenon came also from Taiwan, where Chang and Grup (1992) focused the attention on 54 small firms which targeted their expansion to markets with high psychic distance, like Scandinavia and Soviet Union. What was of major interest was the peculiarity of the market considered: 76% of the sample went abroad exploiting niche markets characterized by high R&D needs and innovative products.

Despite the numerous observation of the phenomenon, the first extensive study was developed just in the 1993 by McKinsey & Co[9], which marked a clear distinction between those firms that respect traditional theories, the so-called *Domestic Based Firms*, and that new category (*Born Globals*) dominated by an important export-orientation. While the former group was characterized by a primary focus on the home market and a weak tendency toward exportation[10], the latter showed inclination to export since its early years. Data demonstrated that these firms started approaching foreign markets on average two years after establishment and used to export about the 75% of total sales. The first recognized example of Born Global was *Cochlear*[11], a still thriving corporation that produces implants for profoundly deaf and has the 95% of its production sold on a worldwide basis. This firm was identified on a sample of 700 firms and was used as reference point for investigating the main explanatory reasons of the phenomenon. More in detail, the Australian office of McKinsey identified three important changes in the worldwide scene that could represent the drivers of SMEs internationalization:

- *Changing consumers' preferences*: Customers began to show a renewed interest for products that were customized and tailored, distinguishable from those standardized developed by large MNEs and distributed on a worldwide base. This imposed firms to be more flexible and responsive, a feature typical of SMEs, characterized by low (or absent) vertical integration and, for this reason, able to follow the trends (Rennie, 1993).
- *Changing manufacturing:* As customized products represented the new production focus, economies of scale completely lost their importance. SMEs, that were traditionally considered out of the international scene because of their inability to compete on a price-basis, discovered their potentiality while offering customers more value and quality, in line with their continuously changing demands (*Ibid*).
- *Changing Information Technology:* The introduction of innovative technologies drastically reduced the communication costs, destroying the advantages that vertically

[9] Rennie, M. W. (1993), *Born Global*, McKinsey Quarterly, n. 4, pp. 45-52

[10] The article indicates that exportation starts on average around the 27th year of establishment and accounts at least for the 20% of the total sales.

[11] http://www.cochlear.com

integrated firms had. This made easier for SMEs to gain information and manage operations across borders at an affordable cost (*Ibid*). New information technologies are perceived by some authors as the most important enabler of the phenomenon as they create a *zero-time distance* condition (Kraus, 2009).

Exploiting the abovementioned conditions, also young firms were able to compete on an international-basis, making the world their marketplace. Since then, the phenomenon has spread worldwide, becoming the centre of attention of innumerable studies and theories which tried to identify and describe the distinctive features of these firms.

Born Globals are usually knowledge-intensive firms, characterized by the adoption of breakthrough technology, used to develop innovative products and services. It has been noted that this represents their greatest competitive advantage, but also their limit. Their offerings are indeed characterized by extreme specialization, which is able to find just a limited customers' pool in domestic market and forces the producer to enlarge its market outlets. It has been proved that the smaller the domestic market is, the stronger will be the push to internationalize, in fact the inventor is dependent on its product (Madsen & Servais, 1997) and has to follow the demand wherever it arises, in order to maximize profit before technological obsolescence and competitors' imitation strategies prevail (Fujita, 1998). The early internationalization can be considered a necessity for these firms, whether for sales reasons or suppling needs. The country of origin and the industry specificities can have strong influence on the pace of internationalization, as firms established in countries with scarce inputs can be forced to search them abroad. In light of this, it is clear that the peculiarities of born globals' market do not allow a slow expansion, more than that psychic distance cannot be too much considered in market selection. This also implies that high technology start-ups should target business with customers' needs as much homogeneous as possible in order to adopt a low degree of adaptation in the marketing mix (Jolly et al., 1992) and diffuse their innovations rapidly.

Another hallmark is the presence of active entrepreneurs, which are characterized by a global mind-set and previous international experiences, that lead them to perceive the word as borderless and fully exploitable. They have usually travelled the world, studied or worked in a foreign country (McDougall et al., 1994) and they are familiar with markets, knowing language, regulations and culture. The born globals' entrepreneurs boast "*alertness*" (Borreto, 1989), meaning they tend to see emerging profit-making-opportunities long before the others just perceive them. Opportunities are in fact not present in the environment and easily available (Weick's, 1995), but they are co-created by those

entrepreneurs able to influence opportunities, thanks to their relevant skills and knowledge (Ardichivili et al., 2003).[12] According with Kaish and Gilad (1991):

> "[…] *not everyone looking at the same market data will come to the same conclusion about the possibility of profit. Successful entrepreneurs are those individuals who are capable of foreseeing disequilibrium profit opportunities when they come across them.*" [13]

They are sometimes also called "*visionaries*" (Knight & Cavusgil, 1996), specifically to highlight their natural tendency to learn and adapt in a quicker manner respect to others (Weerawardena, 2007).
This alertness is influenced by previous working experiences, that give entrepreneurs the tools and framework to process information in a particular manner (McDougall et al. 1994). Confirmation of this is gained from numerous cases studies that demonstrate founders tend to establish their business in a sector related to the one in which they were previously employed (Aldrich, 1990).
Despite the heavy presence of knowledge, these firms usually do not have huge tangible resources (Vesper, 1990) and are on average of small dimensions, counting at most 500 employees and having an overall turnover that rarely exceed $100 million (Rennie, 1993). The absence of important investments in assets force firms to adopt hybrid structure of ownership, like licensing and franchising (McDougall et al., 1994). However, these can easily be subjected to opportunistic behaviours and lead entrepreneurs to prefer less risky governance structure, like networks (Aldrich & Zimmer, 1986). Benefits coming from social networks are three: advice and experiential learning, knowledge of foreign market opportunity, trust and solidarity (Zhou et al. 2007). The last one is the most important as it can be nurtured through innumerable interactions[14] and it allows the protection of the most precious asset of these firms: knowledge, which is extremely volatile and difficult to keep secret forever, as it could be subjected to imitation. Just protection of distinctive resources can provide a sustainable competitive advantage to firms (Barney, 1991) and trusted relationships seem to be the better guarantee to reduce risks.

In 1994, McDougall and Oviatt developed a framework aimed to define and describe the born global phenomenon in light of the number of operations performed abroad and the number of countries

[12] Andersson (2011) introduced the *effectuation theory* in the International Entrepreneurship in order to focus the attention on the entrepreneur's ability to create opportunities. He considered that higher importance should be paid to behavioural aspects instead of focusing only on the entrepreneur's competences: just the combination of personal feature, personal knowledge and social networks can explain the rise of these firms.
[13] Kaish S., Gilad B., (1991), *Characteristics of opportunities search of entrepreneurs versus executives: sources, interests, general alertness*, Journal of Business Venturing, Vol. 6 (1), pp. 45-61;
[14] Larson theorized in 1992 that the number of interactions between partners and the risk of opportunistic behaviour are inversely proportionate, because the damages that a wrong conduct causes to a long-term reputation are higher that the advantages the fool part gains from a one-time opportunism.

involved in the activities. These variables were selected to shift the attention away from the mere exportation to a more extensive consideration of all the operations performed abroad[15].
The authors introduced the concept of International New Venture (INV), which was supposed to unify and delineate a common definition of the phenomenon:

"[..] *a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and the sale of output in multiple countries.*"[16]

The authors pointed out the importance of the international origin of firms, highlighting their ability to exploit resources from different parts of the world in order to gain a competitive advantage. In fact, while MNEs have traditionally relied on economies of scale, INVs compete with indigenous firms transferring knowledge and combining it with other local resources.

Figure 1 presents the four types of INVs identified: The upper quadrants present the most traditional forms of business, characterized by movement of products from the domestic to foreign markets. *Export/Import Start-up* and *Multinational Trader* are labelled as *New International Market Makers*, a common definition formulated to emphasize their ability to spot emerging opportunities and deliver products there before competition increases. The main difference between the two sub-categories is represented by the number of countries that are served: while the former exploit just those markets with which the entrepreneur is familiar, the latter constantly seeks profitable trading opportunities in order to enlarge its network.
Geographically focused start-ups are instead characterized by an increased ability in coordinating activities between different countries, but the region of interest is again constrained. Their peculiarity lies in the specialized needs they satisfy, which explains the strict geographic focus. Nonetheless, their competitive advantage could consist in a trusted network of relationships or in a successful coordination of multiple value chain activities that deliver resources to those countries in which they will be more valued.
The last firm category is represented by *Global Start-up*, a complicated form of firm, characterized by the presence of management with proved skills in geographic and activity coordination. These are

[15] In 2013 Bals et al. conducted a systematic literature review of the most important articles developed on the phenomenon of early internationalization. They observed that 28 out of 107 papers mentioned only exportation as the type of activity in which firms are involved.
[16] McDougall P.P., Oviatt. B.M., (1994), *Toward a Theory of International New Ventures*, Journal of International Business Studies, Vol. 25, Issue 1, pp. 49.

defined as "*the most radical manifestation of international new venture*"[17] as they acquire resources and sell the outputs in unlimited locations.

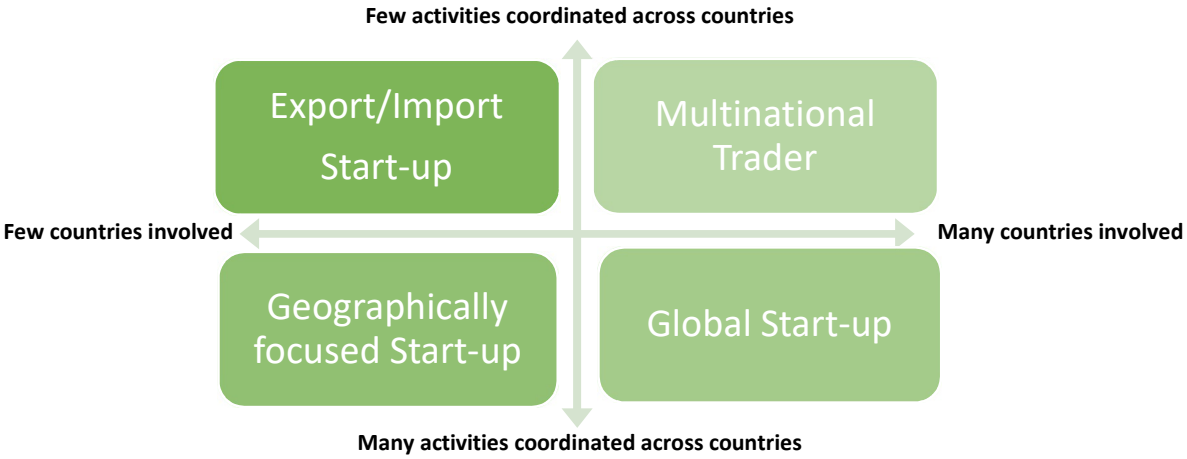

Figure 1: Types of INVs (McDougall & Oviatt, 1994)

The framework provided by McDougall and Oviatt (1994) is now considered a reference point from International Entrepreneurship researchers, but other theories are being developed revealing that a common definition of the phenomenon has not already been reached (Bals et al., 2013).

Bals, Berry, Hartmann and Raettich (2013) developed a systematic literature review on the dimensions defined by the seminal work of McDougall and Oviatt (1994), demonstrating that there are divergent views. In particular, they observed that the multinationality dimension generally does not provide information neither on the number of countries involved in the internationalization nor on the distance across them. On a sample of 110 case studies[18], the number of countries involved ranged from 2 to 70, to just a more general definition of "*multiple countries*" that clarifies how the term was mainly used to distinguish the foreign focus from the domestic one, instead of explaining the precise degree of expansion.

The functions performed abroad represent then the second dimension, which was discovered to refer sometimes to a mere exportation (28 cases out of 110), to marketing, R&D, sales and after-sales activities in others, but it also happened that the activities performed were not mentioned at all, leaving a broad definition unable to capture the real degree of internationalization.

[17] McDougall P.P., Oviatt. B.M., (1994), Toward a Theory of International New Ventures, Journal of International Business Studies, Vol. 25, Issue 1, pp.59.

[18] The literature review has been conducted following the steps identified by David and Han (2004). The focus of the research was on those articles published in scholarly journals and characterized by keywords cited in the most influential articles of the International Entrepreneurship literature. The 110 cases studies analysed have been extracted from the 107 articles considered.

In light of these, it is clear that the worldwide basis of the phenomenon does not allow the identification of a unique and defined pattern. All the authors agree on a rapid pace of internationalization and the importance of hybrid governance structure, but there is still not a unique vision on aspects that strictly focus on the approach to the foreign markets, in terms of activities developed locally, the adaptation of products/services needed or the closeness to customers (Madsen & Servais, 1997).

2.2.2. Overcoming the liability of foreignness

Studies on early internationalization observed that firms can be efficient, effective and competitive on a global scale since their inception, contrasting more traditional theories that emphasize the importance of learning and gradual approach to foreign markets. Despite the empirical and objective differences that many researchers have identified between the two internationalization paths, this paragraph aims to highlight how a different interpretation of some basic assumptions of the traditional wisdom enables the identification of touch points between them and, thus, the exceeding of liability of foreignness.

In particular, one of the distinguishable features of the stage approach is the importance of experience, necessary to overcome the disadvantage that firms face when doing business abroad compared to locals. In fact, commitment decisions are dependent on increases in knowledge about the market of interest and on a consequent decrease in the uncertainty perceived. This implies that additional commitment will be made in small incremental steps, as knowledge needs time to be gained.

Even if modern firms do not internationalize at a slow pace, the logic behind the traditional model is still valuable, as every kind of firm is expected to know at least some minimum country characteristics before entering it (for example, market regulation, language or the presence of trade barriers). This poses questions about how Global Start-ups are able to internationalize since their inception.

Explanation of the phenomenon can be reached when considering a larger time horizon, instead of focusing the attention just on the foundation date of the firm. Many critiques directed against born globals approach assume that if knowledge has not been acquired immediately before approaching the foreign market, then it is for sure missing. Underestimation is, thus, given to the possibility of gaining knowledge thanks to business pre-inception experiences. In this respect the entrepreneur peculiarities, the networks structure, the learning advantage of newness and the internationalization of venture capitalists offer important insights on how born globals are able to overcome liability of foreignness.

As already said, SMEs firms that go abroad early are usually conducted by strong entrepreneurs (Madsen & Servais, 1997) with a global vision. Their previous international experiences reduce their

general perception of borders as huge and insurmountable barriers and create experiential knowledge. In some cases, they also come from an immigrant family (McDougall & Oviatt, 1994), meaning that they boost local contacts and a natural familiarity with the country of origin, that completely crush the distance usually perceived when approaching a new market.

The entrepreneurs' peculiarities allow the establishment of an international spirit since the inception, implying that a global vision will be imprinted to the whole management and that foreign personnel will be introduced since the firm's foundation. These are necessary conditions for born globals, because, as stated by Oviatt and McDougall (1995), "*To be global, one must first think global*"[19].

The market knowledge required to overcome liability of foreignness is therefore present in the firm before its inception. This means that born globals are not internationalizing without considering uncertainty, but they just perceive it lower because of the extensive personal experience of the entrepreneur.

Opportunities and information are additionally gained through networks, which are usually built on personal relationships. These are important enablers for firms that traditionally miss financial resources and represent an additional factor to international experience. In fact, they provide local contacts that can run the early stages of expansion on-site (Bals et al., 2013), but also fill the knowledge gap in case of local inexperience (Sapienza et al., 2005). In addition, local ties provide advantages like trust, reputation and status, which are fundamental especially when it comes to services, as the possibilities of being accepted by the market are strictly connected with the reputation of the provider (Kotha et al., 2001).

Another advantage that global start-ups have in comparison to traditional MNEs is the absence of organizational inertia. Traditional large firms used to establish with a domestic-focus, creating structure, routines, management vision and stakeholders' demands that are path-dependent. When they decide to approach a new market, these firms are constrained by the set practices and their managers are biased applying self-reference criterion[20] to personal interactions and to the marketing mix. The global vision imprinted to the start-ups since the beginning reduces the distance perceived by foreign markets. More than that, born globals boost the *Learning Advantage of Newness* (Autio et al. 2000), that is the flexibility of rapidly learning the competences required by each specific market. Traditionally, MNEs were considered advantaged by the competences developed, but current researches disconfirm it, showing that they often represent a competency trap (Jones, 2011) and that higher organizational dynamism can be reached just in the presence of small dimensions and young

[19] Oviatt. B.M., McDougall P.P., (1995), Global Start-ups: Entrepreneurs on a worldwide stage, Academy of Management Executive, Vol.9 (2), pp. 35.

[20] Self-Reference is the natural tendency of applying personal standards when judging and evaluating others (Lee, 1996). It is extremely risky when it is present at managerial level because leads to biased decisions.

age. These firms therefore perceive a lower liability of foreignness, which is then completely overcome thanks to their positive attitude toward adaptation in non-domestic markets (Autio, 2000).

The last aspect that must be considered is the pressure exerted by venture capitalists to early internationalize. Their role as providers of financial resources allows them not only to influence the strategic direction of firms while binding the funds to international expansion, but also to provide additional knowledge about those markets in which they have an international background (McDougall et al., 1994).

Given these considerations, it is clear that these firms show some antecedent characteristics that move the knowledge accumulation phase from a firm level to an individual (founder) one. In this way, born globals seem to skip stages in their growth, but they actually just do not approach foreign markets from the inception (t_0), but anticipate it before the firm formation (t_{-1}) (Bals et al., 2013). Thus, the concept of "liability of foreignness" is valid also for these firms, which apparently do not face it. Though, its exceeding has to be understood in light of pre-inception founder's experiences and relations, which are often underexplored in the international business literature (*Ibid*).

2.3. Choice of Foreign Market Entry Mode

The decision of expanding abroad represents an important strategic decision, which has to be coupled with a careful analysis of the most suitable form of entry-mode (Hill, 1990). In the past, particular attention has been paid to understand how firms should choose between export, contractual options (licencing) and FDI, leading to numerous theories development. One of particular interest is that of Dunning (1977, 1980, 1981, 1988, 1993), which is drawn on the main lines of explanations that have emerged during the previous years. The author developed a framework that aimed to explain foreign expansion on the basis of ownership, locational and internalization advantages, that are often referred as OLI Framework. More than that, Dunning's theories have then been taken into consideration also in more recent studies, which tried to expand that conclusions also on the emerging service sector (Agarwal & Ramaswami, 1992; Terpstra & Yu, 1988; Brouthers, Brouthers & Wernel, 1996).

2.3.1. Eclectic Theory

During a Nobel Symposium held in Stockholm in 1976, J.H. Dunning introduced the eclectic theory with the aim of identifying and explaining those factors that influence foreign production decision. His contribution lies in considering trade and foreign production as alternative forms of international involvement, which can be explained in light of ownership and location endowments (Dunning, 1977). Previous researches, like those developed by Ricardo or Heckescher-Ohlin, explained trade between developed and developing countries focusing on countries' location endowment advantage, which is

able to describe trade between developed countries just to a limited extent. According with Dunning (1977), in fact, location-specific endowment should be coupled with ownership advantage, as "*foreign production implies that location-specific endowments favour a foreign country, but ownership-endowments favour the home country's firms; these latter being sufficient to overcome the costs of producing in a foreign environment*"[21] (Dunning, 1977, p.399).

The application of the eclectic theory on entry-mode selection states that firms make their decision on the basis of their ownership advantage, location advantage of the target country and internalization advantages of the particular situation:

- *Ownership advantages* represent competitive or monopolistic advantages that are specific and internal to the firm (Dunning, 1988). They can be tangible or intangible resources and may be determined by the industry or country characteristics of enterprises (Dunning, 1977). It is possible to distinguish three types of ownership-specific advantages, in fact they can be (a) exclusive of the firm and stem from size, monopoly power, better resource capability and usage (examples can be the possession of patents, management skills, but also the access to suppliers or raw materials that are not accessible to competitors); (b) boosted by a branch plant of a national enterprise in comparison to *de novo* enterprise (as the former may benefit from endowments present in the parent company that a recently established firm rarely has); (c) the result of the multinationality or diversification of the company, referring in particular to the transactional benefits arising from the management of many assets across countries (*Ibid*). According with Porter (1980) these advantages should be unique and sustainable in order to give firms a comparative advantage over competitors.
- *Location advantages* refer to the profitability a firm perceive in establishing part of its production facilities in a foreign country (Dunning, 1981). It is strictly connected with county's factor endowment, as firms decide to move transferable intermediate products from home country to foreign production facilities just when they can take advantage of at least one immobile local factor (*Ibid*). Possible advantages are not just traditional land, labour and capital, but also market proximity, tax regulations and other favourable political or legal policies (Dunning, 1988). Even if these country-specific factors are common to all firms in the particular market, some of them may

[21] Dunning H.J., (1977), Trade, Location of Economic Activity and the MNE: A search for an eclectic approach, The International Allocation of Economic Activity, New York, Chap. 12, pp. 392-403.

be able to better exploit advantages, enhancing their competitive position within that market (*Ibid*).

- *Internalization advantages* are the benefits perceived by a firm that chooses to transfer ownership-specific assets within the organization instead than sell them or their right of use to foreign-based companies (*Ibid*). Higher the risks of contractual market failure or higher the ownership advantages, greater the firm preference for a hierarchical mode of operation. To give few examples, huge costs for enforcing proprietary rights, reduced possibility for price discrimination or the desire of protecting brand reputation lead firms to disregard contractual form of operations. In addition, internalization of technological products' production allows firms to benefit from technological development thanks to the learning processes that are activated when activities are carried on internally (Dunning, 1980).

The decision of whether internalize or externalize production can be made on the basis of the advantages possessed by firm. In particular, after identifying forms of foreign expansion in FDI, export and contractual agreements, Dunning (1981) develops a matrix in which they are matched with those advantages required to successfully implement them.

		CATEGORIES OF ADVANTAGES		
		Ownership adv.	*Internalization adv.*	*Location adv.*
FORM OF MARKET ENTRY	*Licencing*	Yes	No	No
	Export	Yes	Yes	No
	FDI	Yes	Yes	Yes

Fig. 2: Dunning Eclectic Paradigm (Source: Dunning, 1981)

As can be seen from figure 2, ownership advantage is considered a necessary pre-requisite for every kind of foreign involvement, but the presence of other advantages determines the most suitable entry-mode. In particular, when firms boost just ownership advantage, they should adopt a contractual form, like licencing; while, in the presence of additional internalization advantage, the export solution should be evaluated. FDI, instead, represents a profitable opportunity only for those firms that have ownership, location and internalization advantages. Thus, according with Dunning (1981), firms' decision to expand production abroad is dependent on the firm's size and strategies, its product diversification, plus the specific characteristics of the home country and those of target countries. More than that, in a more resent reformulation of the theory (Dunning, 1993) other reasons, detached from OLI advantages, have been considered potential influencer of the entry-mode choice. For example, firms may have the necessity of finding new market opportunities, unavailable resources or

discover new technologies, but there is also the possibility that foreign expansion aims to follow client activities (*Ibid*). All these reasons may lead firms to select an entry-mode different from that expected when looking at the eclectic framework.

2.3.2. Implications for small service firms

The relations between OLI advantages and entry-mode selection have been formulated while looking at Multinational Enterprises and, in particular, the manufacturing sector. Starting from 1990s, however, higher attention has been paid to service sector and to international activities of small- and medium-sized firms, as demonstrated also by born global theories.

The main reason of understudied service internationalization was the traditional consideration of production inseparability from consumption. Turning point has been represented by Erramilli and Rao's (1990) classification in *Soft* and *Hard Services,* based on their separability or not. According with authors, the former is characterized by the impossibility of separate their consumption from the suppling moment (like in the case of the accommodation service provided by an hotel), while the latter boosts the possibility of being stored and, therefore, it can be distributed or delivered to customers in a second moment. This classification trigger researchers' studies on firms' internationalization, which tried to extend traditional theories to service sector. An important example is represented by the study conducted by Brouthers, Brouthers and Wernel (1996), which tested the OLI Framework and entry-mode selection on service firms. Their theory was inspired by two previous similar works (Agarwal & Ramaswami, 1992; Terpstra & Yu, 1988), which considered Dunning's theories in light of service expansion, but the innovativeness of Brouthers and colleagues' contribution lied in their interest for high-technological firms, characterized by small and medium dimensions.

The first attempt to evaluate eclectic theories in an unusual industrial sector was conducted by Terpstra and Yu (1988). They analysed foreign investments of US advertising agencies on the basis of five factors selected from those traditionally adopted in the study of manufacturing industries. In particular, they assessed the positive impact that market size of the host country, oligopolistic reaction, geographic proximity, firm size and its international experience have on FDI. While the first variable appeared as an attractive factor able to compensate high risks connected with unfamiliar environments, oligopolistic reaction explained that firms try to expand simultaneously in order to maintain their competitive balance (Knickerbocker, 1973). Geographic proximity, instead, was not evaluated as a discriminatory factor between countries, in fact the service sector is strongly based on face-to-face interactions, which cannot be ensured even in the case of close countries. Actually, the higher the distance between home and host country, the higher the likelihood of FDI, meaning that firms may be more inclined to establish a foreign subsidiary in the case of huge distances. Last variables

are, then, size and international experiences, which represent firm's specific advantages and resources, that proved to encourage foreign expansion also in the case of service firms (Terpstra and Yu, 1988).

Another important contribution to the service literature has been offered by the study conducted by Agarwal and Ramiswami (1992), which focused on the interrelationships that verifies between ownership, locational and internalization advantages within firms. The sector under study was that of US equipment leasing, in which most of the previous mentioned theories have been confirmed. However, some important conclusions have been reached in reference to SME, like, for example, their preference for approaching high potential markets through joint venture, as this form allows them to share risks and costs, while also complement the range of resources needed to expand abroad. This form was often evaluated also by large multinational firms in those cases in which investment and contractual risks were low. In case of high contractual risks, instead, firms tended to prefer export to all the other entry mode, in order to be involved in a limited way. Finally, the decision of adopting FDI was typical of those firms with high differentiated products, as the risks of knowledge dissemination was too high.

In the light of abovementioned results, Brouthers, Brouthers and Wernel (1996) tested the extent to which ownership and locational advantages have an impact on entry-mode choice of firms in the computer software industry. The authors identified a sample of 125 US-based firms and found that firms adopted more integrated entry-modes as and when their ownership advantages were increasing or when they perceived higher locational advantage. Important considerations have been made on the basis of production costs advantages, in fact firms proved to adopt integrated and independent entry modes when they perceive to boost that advantage, while they preferred cooperative solutions in the opposite situations.

Although these studies expand existing literature on service sector, particular attention has to be paid to the typology of service under study. According with this, next paragraphs offer a literature review of knowledge intensive sector, which represents the selected field for this dissertation.

2.4. Knowledge-Intensive Business Service

In recent years, service sector is showing a leading role in advanced economies, accounting for more than the 70% of the Gross Domestic Product (GDP) (Morikawa, 2016) and giving rise to the so-called phenomenon of "*Knowledge-Intensive Economy*", in which economic activity is strongly dependent on the development of technology and innovation. A major role is played by KIBS, "*institutions that*

promote the generation, diffusion and accumulation of knowledge within economic systems"[22] (Miles et al., 1995, p.10). Even if their internationalization path has not extensively been studied, they tend to adopt a born global approach in line with their peculiarities. Starting from this assumption, this thesis aims to analyse how these firms are accepted and how they overcome cultural distances in a sector characterized by critical interactions between service provider and clients.

2.4.1. Characteristics of KIBS

The term "*Knowledge-Intensive Business Service*" (KIBS) was first introduced by Miles et al. in 1995 to describe institutions that offer other businesses various new services connected with emerging technologies, either developing them or producing and transferring knowledge about their use. The technology considered by these firms varies greatly, from a general one, like IT or biotechnology, to more specific one, that arises to solve emerging problems, as in the case of environmental technology. The services they offer can be training, consulting or measurement and representing primary source of information for clients, or they can provide intermediate inputs that enable clients' own knowledge generating, as in the case of computer and communication technologies.

KIBS heavily rely on professional knowledge, highlighting the importance of human capital, instead of the more traditional dependence of firms on financial capital or labour (Alvesson, 1995). Knowledge is not just their main factor of production, but also the output sold in the form of immaterial and intangible services. In this respect, it is important to focus on the dynamic formulation of the knowledge concept that must be considered when dealing with KIBS: the knowledge involved is described as an active process, a matter of learning, in which not just the ability to organize information is needed, but also the ability to apply it identifying and solving problems (*Ibid)*. This concept, focused on learning by doing and experimentation, is fundamental in today economy, as it is at the basis of production processes and it is often required by the increasing complexity of society.

Miles et al. (1995) introduced a distinction within the KIBS, based on the specialisation of knowledge employed. In particular, he identified two different categories:

- *P-KIBS*, Traditional professional services that help customers in dealing with social systems (like accountancy and legal service do for the complexities of administrative rules and regulations), physical systems (as architects and building services) and psychological and biological systems (as medical and veterinary services). This kind of

[22] Miles, I., Kastrinos, N. and Flanagan, K. (1995): *Knowledge-Intensive Business Services: Users, Carriers and Sources of Innovation*, European Innovation Monitoring System (EIMS) Publications, Luxembourg, Vol. 15, pp. 1-96.

firms are usually just users of new technologies and they do not contribute in their development and diffusion;

- *T-KIBS*, new high-skills and high-complexity services that produce, carry and use new technologies. Not all of them are recognized as professional services, as in the case of repair and maintenance activities, which do not boost the professional status, even if they are associated with emerging technologies and require technical knowledge.

There are several reasons that determine the emergence and continuous increase of KIBS in the international scene, but the principal one is the growing demand for external service inputs coming from firms. Tendency to outsourcing and concentrate on core competences is a distinctive phenomenon of current years and can be understood when dealing with KIBS, because their activities require extensive experience in the specific field plus great expenditure of time, money and effort before becoming efficient. More than that, competition and interactions with different clients strengthen the service performance and allow the establishment of economies of scale. Though, large firms cannot gain sufficient benefits from internalization of these services and stimulate an always major specialization of service providers. Contrastingly, small firms tend to perform these activities in-house, as they are not able to afford the expensive KIBS services (Tordoir, 1993).

Demanding firms are exactly those that allow the birth of KIBS, through the downsizing of organizations they lead to the spin-off of individuals which tend to establish themselves as service-providers. The self-employments regard in particular those that have gained technology-competences and have understood the need of specialization required by their previous employer. Their emergence seems to follow a stage model in which services are initially provided in-house in large corporations, they then gradually become profit centres, that can be exploited also by external firms, and finally the whole department is dismissed and new KIBS are formed. These new firms usually lead to the creation of niche markets, in which technology is applied and elaborated in relation to the old specialism of the firm's founders. Though, the staff expertise and the knowledge employed represent the main competitive advantage of these firms, which must be continuously innovated in order to respond to the rapid regulatory and social changes, and the fast rate of obsolescence of technologies (Miles et al., 1995).

Innovation is not just a requirement for sustainable performance, but it is the primary role of knowledge-intensive services, which work as intermediaries between inventions and the practical innovations. Their activities allow a reduction of the complexities and the risks perceived by their clients, sometimes also through a strict interaction and the elaboration of services tailored on the particular needs. Most of the innovations developed are indeed linked with client specific demands and emerge from ongoing projects. Larsen (2001) proved that the social interactions between KIBS'

employees and external members of projects' teams represent the most important element of innovation. As the service providers' expertise is usually extremely narrow, learning-by-networking allows the convergence of knowledge and skills drawn from different fields. This is one the major difference that lies in relation to manufacturing sector, where innovation is not just rarely the result of collaborations, but it also usually is quantitatively less. Nonetheless, the rate of innovation differs widely among the KIBS broad category, as sometimes services emerge as a result of innovation, while other times they are the producers (Wood, 2005). Another distinction refers to the kind of innovation developed, which can regard the product, the process of development, the delivery of the service or all the three classes of innovation together (*Ibid*). Despite the category and the role played in innovation, it is important to note that the rate of innovation development is related with high internationalization and the competition faced (Larsen, 2001). In this connection, next paragraphs analyse the internationalization path of KIBS and how innovation evolves through it.

2.4.2. Internationalization path

Recent launch of KIBS has not allowed an extensive study of their internationalization path, nonetheless, some theories are emerging in recent year. In particular, it is now clear that their internationalization path cannot be explained through the stage theories developed by Vernon (1966) and Johanson and Vahlne (1977), as the rapid rate of obsolescence and the niche market of their interest require them to expand at a faster pace, following the born global approach (Bell et al., 2003). Early internationalization seems to be very suitable for this kind of firms, as it allows to lock-in new customers and exploit their proprietary knowledge on a worldwide basis (*Ibid*). An analysis conducted by Halldin (2010) on 301 KIBS showed that those that internationalize from inception boosted larger dimensions and had higher sales volumes in their first five years of activity. From a quantitative point of view, born globals sales exceed 100% those of non-born globals, and the employment rate of the former was twice that of the latter.

The necessity of finding new clients is not the only reason that encourages internationalization. Many firms decide to follow some clients abroad, in particular when it comes to large corporations that have subsidiaries established worldwide (Patala, 2008). In this situation, uncertainty and risks are reduced, as the previous collaboration offers knowledge and tools to successful approach foreign market. Alternatively, need of knowledge and competences acquisition can drive the expansion. Nonetheless, founders' mind-set and the corporate culture have a strong impact on the decision regarding internationalization, in particular on the model of international activity.

As already seen in chapter 2, the entry-modes available to service internationalization have been constrained to FDI for a long while. The distinction between *Soft* and *Hard Services* drew up by Erramilli

and Rao's (1990)[23] broaden the range of possibilities (Rodriguez et al., 2012) and opened the door for further study.

An important contribution to the service internationalization topic has been offered by Toivonen and colleagues (2009), which focused the attention on the models and paths that KIBS use when they go global. Researchers integrated previous existing categorisations about the way of conducting operations abroad[24] with four more recent approaches that are described as *Indirect*.

The direct possibilities are FDI, Export and International Operations through third parties. The former implies huge investments in a wholly owned subsidiary or branch, that can be established as a green-field, or can be the result of merger and acquisitions. FDI poses questions about the degree of centralization of activities, which must be decided and organized by the headquarter (Howells and Roberts, 2000). The export solution is less expensive, as services can be delivered through people travelling, or in an immaterial manner, exploiting telecommunications and Internet. A peculiarity is presented by the engineering consultancy, where export projects are established for a certain time in order to exploit technical knowledge on different countries. More in detail, these projects require consultants to establish in a specific market for the period of project development and shift to a new one once it is concluded (Sharma and Johanson, 1987). The last direct solution is the one less adopted by KIBS, although it implies a great amount of possibilities, moving from franchising, licensing to contracts that include non-ownership. These forms, though, leave to the partners too much power on specific markets, which is not suitable for sectors with a high rate of obsolescence (Grönroos,1999).

The indirect possibilities of approaching international markets allow a preparation or a support to foreign activities. In particular service firms could decide to serve foreign customers in the firm's home country, gaining access to market peculiarities and understanding their clients' needs (Roberts, 1998), or they could offshore some non-core activities, in order to specialize, reduce costs and start familiarize with the foreign environment (Massini & Miozzo, 2009). More participative forms are instead the membership in a network or the recruitment of international experts, as they both provide local contacts and increase innovativeness (Saxenian, 2000).

The network form requires particular emphasis, as it has been the centre of numerous studies that investigated the extent to which foreign collaborations can increase the rate of internationalization. The study conducted by Rodríguez and colleagues (2012) highlighted the positive relations that exist between collaboration and innovation, and between innovation and internationalization. Starting from these, authors proved that an increase in the network participation automatically leads to an accelerated rate of internationalization. In fact, collaborations offer important insights about the

[23] For further information, see paragraph § 2.3.2.

[24] In particular, authors develop their model starting from Vedermerwe and Chadwick (1989) entry-mode categorisation into FDI, exports and operations through third parties.

foreign market, reducing the liability of foreignness perceived by new entrants; more than that, being part of a network offers opportunities of knowledge exchange and the elaboration of sophisticated services and *ad hoc* delivery systems that meet the new clients' requirements. The higher knowledge resulting from interactions is therefore specific both at an economic/cultural and technical level, providing general information about language, regulations and cultural peculiarities, but also important insights related to the services required. In addition, effective networks can lead to the formulation of new business models, which can be more suitable for the target market. In the light of this, collaboration with foreign-based firms figures as the most important enabler to successful approach a new market, but it is not the only one.

Despite the internationalization model selected, an important success factor is the Brand Name (Patala, 2008), which proved to be critical in the attraction of valuable personnel and in the achievement of local credibility. A strong corporate culture should accompany, providing inspiration and values for all employees spread worldwide and ensure that a customer-oriented approach is always adopted. The main risk of KIBS is, indeed, the tendency to underestimate the cultural and market differences that characterises each country, considering technical sectors not heavily affected by their influences (Patala, 2008). Despite preconceptions, as services are characterized by numerous interactions, it is fundamental to pay attention to distinguish features and try to meet clients' expectations in order to be accepted.

2.4.3. Client – supplier interactions

Knowledge-Intensive business services are developed for other businesses (Strambach, 2000), because their complexity, combined with huge costs, make them not affordable for private clients. In addition, they are more often adopted by large corporations, as SMEs are usually not able to clearly grasp the possible benefits obtainable as well as the quality and trustworthiness of the service providers (Miles, 1995).

The decision to adopt KIBS is indeed dependent on innumerable factors, first and foremost the benefits and the value that clients think they can gain (Aarikka et al., 2012). Firms working on new product or process development are always able to decide whether they want to internalize or externalize to a specialized KIBS some technological issues concerning their strategic operations. The decision is affected by perception of confidentiality, as KIBS services are offered to several companies in the same sector and, thus, the risk of confidential knowledge leaking is always very high (Miles, 2003). According with the *"compatibility hypothesis*", the thesis proposed by Tordoir (1993), just those firms with great internal professional capabilities are willing to adopt external services, as they are the only one who can appreciate the solutions proposed by KIBS. Client firms have, thus, to boost an *absorption capacity* (Sjøholt, 2001), as they need skills and competences to grasp knowledge and inputs and understand

how to adopt it internally. In fact, even if activities have been outsourced to an external firm specialized in technical problem solving, the client firm must always maintain control over operations to some extent (*Ibid*). Clients have to possess preliminary knowledge about the services purchased, as this would allow "absorption" of know-how and capabilities to formulate and re-formulate questions and problems during interactions, leading to the consequent transfer of knowledge. These conclusions have been reached through a study developed by Sjøholt (2001), where transnational interactions between service providers and consulting firms in Norway were analysed. From the other side, also KIBS must be able to learn from their clients, as interactions with professionals present in the client company represent the most important moment for coming into contact with tacit and explicit knowledge that can be, successively, codified and exploited to offer innovative solutions to further clients (Nonaka & Takeuchi, 1995). This is the so-called process of *knowledge conversion* (*Ibid*), part of the model developed by Nonaka and Takeuchi (1995), which highlights the crucial role of client-supplier interactions in the development of KIBS competitive advantage. In fact, according with them, KIBS strengths are not built on knowledge about core practices, technologies and techniques for performing specific services, but are based on their ability of identifying, understanding and solving clients' problems. In addition, the way of delivering services based on personal relationships and networks, seems to be critical to their success (*Ibid*). Evidence is provided also by the fact that they generally do not have marketing departments, as their promotion results from professionals operating in their network (Miles, 2003).

The decision to employee service providers may be taken by firms for economic or non-economic interests. In the first case, the firm's environment is characterized by mechanic complexity, in which the adoption of KIBS represents a strategic choice and internal users are able to reap benefits from the external support. In case of non-economic motives, the choice is leaded by the desire of having an external point of view, in order to solve internal crises. In this situation, user-supplier interactions are extremely liable and trust plays a fundamental role (Tordoir, 1993).

Other factors can then affect the consideration of services, in particular an immature market (Wang, 2007) may not be able to understand the value embedded in the provision. In this situation, which is typical of emerging markets, customers may ignore the potential of some technological innovations or they may be culturally led to reject some services. An example is represented by the low consideration that consultancy have gained in China, where a pioneering company was accused of "*selling air*" because of the Chinese tendency to attribute value just to tangible products.[25]

[25] A study conducted by Lingyun W., Muhos M. and Kess P., (2011) investigated the main challenges that a sample of Finnish KIBS faced in approaching the Chinese market. The rejection of consultancy by Chinese firms emerged from the interviews conducted by the authors and the phrase "*selling air*" was used by a Finnish company to express the feeling they had during their interactions.

Decision making structure, price sensitivity and lead time are other fields that tend to vary greatly between countries and, thus, they can have strong implications on the success faced by KIBS in foreign markets (Lingyun et al.,2011). A peculiar aspect is proximity, which is generally perceived as not influential in large firms' decisions, as they always look for leading-edge service providers, independently from their location (Wood, 1998). However, it has a strategic role when clients are of small dimensions. In this case, in fact, KIBS are generally selected through personal contacts and business acquaintances' references, leading to preference for locally present firms. SMEs do not show higher concerns about travel costs and delays respect to large firms, but they feel more confident in firms that operate closely (*Ibid*). Therefore, personal contacts, referrals, network participation or extensive industry knowledge have been demonstrated to exercise particular influence over preference of all the above-mentioned factors during pre-project phase (Filiatraul et al., 1997).

The decision to adopt certain services is, however, not the only moment subjected to cultural influences, in fact also the quality perceived and the degree of satisfaction is often difficult to be evaluated in a standardized manner (Miles et al., 1995). The presence of many providers of low quality services, as the phenomenon of "*cowboy firms*"[26], have reduced the general trust that firms tend to attribute to their suppliers. Anyway, not all services are characterized by difficulty of quality demonstration, in fact Mathè and Shapiro (1993) make a classification based on the qualities associated with transactions. The quality of those services in which search of information is fundamental is that easier to demonstrate, while in the cases in which prior experience must be present to make judgements, the service will have a medium difficulty of demonstration. The most complex case is the one in which credence is fundamental and the client will have to choose looking for evidence of the service providers' capabilities. More problematic is then the case in which the clients are poorly informed, as they will not be able to make a choice counting on word-of-mouth or quality standards.

To reduce the diffidence shown by clients unusual to KIBS is important for firms to be part of international exhibitions and trade shows, as it allows publicity of the brand, but also it makes potential customers aware of innovative services (Miles et al., 1995). Recent tendency is then the one of adopting ISO quality assurance system in order to make customers confident about reliability of services and to gain a competitive advantage in less-informed markets.

Once the service provider has been selected, it is important to begin the collaboration clearly defining responsibilities, procedures, possible trainings and meetings (Filiatraul et al., 1997). At this stage

[26] Miles et al. (1995) presented the case study of many environmental consultancy firms that employed non-qualified personnel in order to meet the growing demand arisen in 1993. That choice led to a decrease in the confidence put by clients on the whole category of service providers and a tendency to re-internalise many activities.

ambiguity should be reduced in order to establish a clear collaboration that aims to balance performance asymmetries. In fact, while clients generally have *a professional knowledge asymmetry*, as they do not have a clear understanding of the technical feature of service and how it will be performed (Sharma, 1997), service providers that work at an international level could have a *local knowledge asymmetry*, due to scarce information about the environment in which they will work (Heide, 2003). The extent to which the two partners collaborate and try to establish an open dialogue determines the risk of goal-incongruence[27] (Dou et al., 2010).

In some cases, an intimate and interactive client relationship may reduce skepticism, while in others arm's length one could be preferred. Cultural differences, KIBS sector and firm peculiarities determine the preference, but Toivonen (2004) furnished proof that tendency to appreciate intense relations is emerging. Today firms are expecting KIBS to play a proactive role in their business, not just working on-demand, but proposing solutions to weaknesses and potential risks that they detect in advance. This approach implies that KIBS need to be kept informed both on professional and specialised knowledge and on the clients' business. Though, shared problem solving is not just beneficial for clients, which ensure external experts' support in the long run, but also for suppliers that can learn from interactions and enlarge the range of service provided. Clients that prefer this approach are generally large, profitable and truly acquainted firms, who understand that long-term collaborations with KIBS may offer them a great competitive advantage in terms of technology updating (Glücker, 1999).

Nonetheless, cases of arm's length relations still exist and they could represent a strength for those KIBS interested in approaching SMEs. The adoption of a more standardized service provision could allow a reduction in costs and modularization of solutions to common problems. It practically could lead to a division of labour in which clients' interactions and service delivery are performed by para-professionals, while specialized workers focus on challenging and more complex situations (Miles, 2005). Though, this situation damages both parties as the client participation is a critical input that trigger learning process (Filiatraul et al., 1997).

The shape imprinted to the collaboration strongly depends on clients' preferences, which are generally the result of social networks and organizational structure in which they are embedded (Hislop, 2002). However, relations have been distinguished by Tordoir (1994) in three typologies, according with the extent to which learning opportunities are available:

[27] Goal incongruence is an issue that characterizes agency relationships and must considered in professional service because of the development of interdependent tasks. In fact, as described by Wageman and Gordon (2005), in KIBS individuals are supposed to collaborate and exchange resources and help interactively, increasing the risks of misunderstandings.

- *Sparring relations* arise between supplier and users when management takes care of negotiating. In this situation interactions happen between equal professionals and, thus, high learning opportunities may arise for both sides. An example is represented by strategic management consultancy, which allows to highlight also the importance that trust and open dialogue have on a successful collaboration (*Ibid*). In this case, proximity plays a key role, independently from the client-firm's size. In fact, face to face interactions are a necessity for reducing risks of misunderstanding, while also encouraging exchange of information and potential development of innovations (Miles, 2003).
- *Jobbing relations* refer mainly to engineering and technical services, where less interactions are required as the service provider is usually asked by the client to perform specialist and technical tasks (Toivonen, 1994). In this case there are variable possibilities of new knowledge coproduction or development, which depends from proximity and client's willingness to collaborate (Miles, 2003).
- *Sales relations* are, finally, those more standardized, where previously developed services are sold to a broad range of clients. Most typical example is that of computer software, where proximity is not needed to ensure better results as collaboration rarely verify and, even less often, lead to innovations (*Ibid*).

Client-supplier interactions should not conclude with the end of the contracted service, in fact post-project phase represent the most important driver for a long-term relationship and a competitive advantage respect to other firms. Follow-up visits, surveys of customer satisfaction, maintenance contracts and guarantees are just some of the tools that KIBS can use to ensure loyalty, but they are usually underestimated (Filiatraul et al., 1997).

A unique pattern of clients' relations development is therefore not possible as there are numerous factors affecting preferences, this means that KIBS should internally evaluate markets' preferences on a case by case basis.

2.5. Emerging markets' environment

Emerging markets represent the greatest revenue generating opportunity for firms from developed countries, which are attracted thanks to reduction of transportation and communication costs, and increasing economic liberalisation (Arnold & Quelch, 1998). Many researchers encourage them proclaiming that globalisation has *flatten* the world (Friedman, 2005) and therefore firms can compete on a global scale adopting a *one-size-fits-all* strategy. Nonetheless, data show that there are still huge differences among countries to which firms must pay attention (Ghemawat, 2007), in particular when it comes to less developed countries.

Next paragraphs present barriers and enablers that internationalization theories have pointed out, particular attention is then given to KIBS internationalization in these markets, identifying which are the main success drivers and some of the risks that firms have to take into account.

2.5.1. Internationalization strategies

The mid-1990s are often referred as turning point by International Business scholars as the introduction of Internet and the collapse of the Soviet system changed the world frame reference. Convergence of tastes (Levitt, 1983), Death of Distance (Cairncross, 1997) and Flattening of the World (Friedman, 2005) are just some of the visions that communicate an apocalyptic view of globalization, in which a complete global integration is predicted (Ghemawat, 2007). Levitt (1983) theorized a global market in which products would be sold worldwide in a standardized manner, leading to enormous economies of scale for firms and relentless decrease of prices for customers. Cairncross (1997) focused on the role of Internet as enabler of global competition and as removal of barriers between countries, in particular for emerging economies which were supposed to play a leading role in a shrunk world. This was less radical then the assumptions proposed by Levitt, but today data shows that only the 40% of the world population has an internet connection[28] and just the 54% of adults set in the developing countries is an Internet user[29]. The gap between developed and developing countries is being levelled also from Friedman (2005) point of view, which pointed out that services can now be outsourced to the smartest or the cheapest producer around the world, creating a global competitive environment. Regardless of which is the focus of the globalization theory analysed, they all poses too much emphasis on the current state of globalization, which is shown by data to be overestimated. Pankaj Ghemawat (2007) demonstrated it presenting the *10 Percent Presumption*, a concept used to explain that most of the economic activities that could be conducted at an international level are instead still performed domestically. In particular, he analysed data of cross-border migration, telephone calls, trade-to-GDP and FDI, which all show a level of internationalization near to 10%. This value is thus considered representative of the real degree of globalization, clarifying that the current state of the world is that of *Semi-globalized*, in which distances and barriers have to be considered despite the significant progresses that has been made.

Differences among countries are extremely relevant especially when it comes to emerging economies. We use this term indicating all those countries characterized by low-to-middle per capita income and

[28] Data sourced from Internet Live Stats (www.InternetLiveStats.com) and elaborated by International Telecommunication Union (ITU), World Bank, and United Nations Population Division. Estimation refers to July 1, 2016.

[29] Data from the Pew Research Center's (http://www.pewresearch.org/) annual survey on global Internet usage in 2015.

sustained economic growth (Blanco, 2009). Scholars have given several definitions over the years, for example Elango and Pattnaik (2007) used the term to describe those countries characterized by economic institutions that are changing and adapting to free market conditions, while in the case of Hoskisson et al. (2000) the focus was on the growth potential arising from economic liberalisation. Even the number of countries that have this status differs widely according with the institution that has made the classification: while the International Monetary Fund (IMF)[30] identified 23 countries, Standard and Poor's[31] enumerated 21 and Dow Jones[32] developed a list made of 22 nations.

Despite the precise number, all these countries differ in the degree of macroeconomic stabilization and the pace of political change (Hoskisson et al., 2000), which represent key variables for determining the profitability of the market for developed countries' firms. Emerging economies are in fact a fertile soil for worldwide firms, thanks to the size of consumer market (Day et al., 2004) and the increasing purchasing power, but numerous challenges are still present and need to be evaluated when selecting the market to enter.

Country risk is one of the first indices that firms should look at, because it refers to the degree of uncertainty of the political, economic and financial environment (Erb et al., 1995). Laws and regulations are often transient, and an instable political environment could imply modifications against foreign firms present in the host country. Consequences could be tariffs, but also confiscations of assets without adequate compensation (Spar, 1997). Economic and financial risks are instead related to one other, as they could lead to currency crises, recession, situations of inflation, which all have repercussions on the demand-supply equilibrium and can influence the profitability expected by the foreign firm. High levels of country risk can thus discourage firms' entrance or lead to entrance characterized by low or delayed investment (Johnson & Tellis, 2008).

Another fundamental factor that has to be evaluated prior to entrance decision is the level of infrastructure, which represents the primary source of transaction costs and operational challenges (Khanna & Palepu, 2010). The peculiarity of emerging markets' ecosystem characterized by absent or not properly working infrastructures led to the coining of the term "*institutional void*" by Khanna and Palepu (Arkalgud, 2011), which identifies "*transactional arenas where buyers and sellers are not easily or efficiently able to come together*"[33]. This situation pertains to all developing countries, but its seriousness can change from country to country and can differently refer to product, labour or capital market (Khanna & Palepu, 2010). Chile, for example, is characterized by an efficient capital market, but completely absent communication infrastructures. This shows that each firm must pose attention

[30] http://www.imf.org Data refers to the year 2016.
[31] www.standardandpoors.com Data refers to the year 2016.
[32] www.dowjones.com Data refers to the year 2016.
[33] Khanna T., Palepu K.G., (2010), *Spotting and Responding to Institutional Voids – Identifying Opportunities in Emerging Markets*, Harvard Business Press, Boston, p.5.

on the target country's infrastructure situation, but it has to spot those on which it highly relies and avoid the risk of generalisations.

Which infrastructure are present and which are missing can negatively impact on the foreign firm's business model, posing it into question. In particular, after having identified the additional costs embedded in the underdeveloped environment, the firm must understand the extent to which it is more profitable to replicate its business model or adapt it to present conditions. It is important to remember that even a globally standardized strategy could address different target customers among countries, as needs, tastes and psychographic characteristics widely change (*Ibid*). Thus, a replication strategy may be risky, in particular when firms expect to succeed while offering the same standardized product/service worldwide and just lowering price in developing countries, in order to meet customers' willingness-to-pay. In fact, affordability has to be coupled with feature that are higher valued by potential customers.

The level of infrastructure influences also decisions of whether adopting a collaborative strategy or a going solo one: while the former allows faster local knowledge acquisition, the latter reduces the risks of training and informing a potential future competitor. Firms can also ponder whether to accept the infrastructure situation or try to exploit its capabilities for internalizing services that are locally missing. The second option is rarely encouraged, as local governments impose strict constraints on foreign firms' operations (*Ibid*).

The last, and most important, decision that must be evaluated in light of the infrastructure situation is that of entering, waiting or exiting the market. It may appear as a final decision, but as the level of infrastructure is strictly dependent on the macro context, like political, social and cultural variables, firms must continuously readdress themselves this question as long as the external environment evolves (*Ibid*).

Peculiarity of most fast-growing markets is then the risk of corruption, which is able to germinate thanks to the numerous unresolved political issues and the weak institutions unable to ensure transparent rules and regulations. In many countries culture of corruption is rooted and appears as a social norm (Barr & Serra, 2006) that is not even contradicted by the growing middle class (Kaymak & Bektas, 2005). Traditional theories (Husted, 1999) affirm that new immigrants should be more involved in monitoring market fairness and transparency, but a study of twenty-four firms for 12 years conducted by Kaymak and Bektas (2005) demonstrated that neither young generations consider transparency more important than their economic well-being. Firms should thus prefer those countries characterized by liberal economic policies, huge investments in public infrastructure, solid financial systems, effective governments and rule of laws, as these are the only situations able to mitigate corrupted behaviours (Kaymak & Bektas, 2005).

Many other challenges are then faced by foreign firms, but their influence changes according with the peculiarities of the sector analysed and the country of interest. Huge differences have been found when internationalizing customer products or services, as the degree of adaptation or standardization that has to be adopted changes following the country's culture and its openness. Nonetheless, some general success factors for market entry have been identified, especially for what concerns the timing of entry, the most suitable firm size, the degree of openness and the economic and cultural proximity to be preferred (Johnson & Tellis, 2008). These factors are investigated with a restricted focus on the Asian continent, in order to offer more reliable insights.

The decision on when to enter an emerging market has traditionally been considered a crucial one (Pan & Chi, 1999) that presents advantages and disadvantages whether being a first mover or a late entrant. Early entrants can have more time to study the market, can lock-up key resources, set patterns of customer preferences and gain the favour of governments and, in certain cases, specific concessions (*Ibid*). On the other side, they could face unpredicted risks, experience returns lower that what expected and not being able to exploit competitors' experiences (Golden & Tellis, 1993). The analysis developed by Johnson & Tellis (2008) on a sample of 192 firms entering India and China showed that early entrants have more possibilities of success, especially when they adopt strategies with high levels of control. This proved to work even better in the case of India, where brand loyalty is extremely high[34]. On the same sample, firms that have succeeded in the host country were usually those characterized by small dimensions, because in a new and complex business environment it proved to be more important being flexible than having huge amount of resources (Hollensen, 2004). Factors like the inability of these firms to sustain periods of possible negative performance, and the lower financial resources available for market analysis and product development, appeared, therefore, to not influence the success rate.

Surprising is instead the impact that openness has on new entrants. As this factor refers to the absence of barriers to entry, one would expect that higher its level, easier the entrance in the foreign market. Data instead showed that a huge degree of openness would excessively decrease prices and increase costs, resulting in a competitive battle in which just those firms that are very efficient would be able to survive (Gestin et al., 2001), as it would attract firms from all over the world. Lower degree of openness leads, therefore, to higher success possibilities as the restrictions stimulate local demand and encourage quality competition instead of the price one.

[34] Countries characterized by high collectivism and uncertainty avoidance show tendency to have unusual brand loyalty, in fact they are often characterized by a single brand dominance that accounts for 40-50% of market share (Robinson, 1996).

Openness is a double-meaning concept, as it has not just an economic significance, but it can sometimes be referred to cultural field, indicating people tendency to accept new ideas, whether products, services or lifestyles (Khanna & Palepu, 2005). This has important implications on the extent to which cultural distance has to be considered, because the presence of open-minded customers could increase the chances also for those firms that are entering a cultural distant market. In general, Johnson and Tellis' (2008) study suggests that profitability is more likely when firms extend in countries where there is the tendency to attribute similar value to the products or services sold.

Despite these general considerations, in-deep analysis can be conducted just when focusing on the sector of interest, for this reason next section aims to better understand which are critical factors and risks that foreign knowledge-based firms face in emerging markets.

2.5.2. Challenges and Enablers for KIBS

Services represent an important part of the emerging markets' economy, as their efficient production is increasingly seen not just as the result of development, but also as the main source of economic growth (Braga, 1996). Their increasing tradability brought challenges and opportunities for these countries, which can increase their exportation, but also attract new service-related foreign investment (*Ibid*). Domestic production is in fact unable to satisfy the whole internal demand, as there are innumerable niche markets that cannot be developed locally due to the absence of necessary knowledge. A crucial role for luring foreign firms is thus the development of appropriate infrastructures and regulations. In particular, there is the need to work on reciprocal negotiations between countries, ensuring a major harmonization among trading partners, and supportive human and physical infrastructure should be introduced (*Ibid*).

Despite these barriers, the interest shown by developed countries' firms is keen, as small professional and highly specialized KIBS need to exploit worldwide growth opportunities in order to take advantage of their proprietary knowledge before obsolescence. However, literature about their internationalization in these complex environments is missing (Knight, 1999) and an integrated framework about entry strategies has not been developed. Recent analysis of case studies[35] is offering some insights about success drivers and mistakes of these particular firms in Asian countries, but theoretical explanation is limited.

Styles C., Patterson P.G. and La V.Q. (2005) analysed 17 Australian KIBS, characterized by small-medium dimensions, that successfully entered the Asian markets. They recognize that some general drivers,

[35] The analysis conducted by Styles C., Patterson P.G. and La V.Q. (2005) present key lessons learnt from 17 Australian KIBS that conduct business in Southeast Asia. However, the importance that personal interaction styles and intellectual proprietary framework plays in the sector requires further studies able to tell the difference between different cultural settings and countries.

like entrepreneurs' international spirit, importance of long-term commitment and involvement in local networks proved important for service firms as well as for manufacturing. Though, commitment does not refer just to the establishment of local offices in the target market, but Asian people expect training programs, participation in seminars and huge amount of free marketing materials. Commitment is thus not just economic, but it has to be perceived by clients also from a behavioural point of view.

Its importance increases as the degree of face-to-face interactions raises and, consequently, the attention given to language skills, interpersonal skills and sensitivity to cultural issue must follow. The personnel involved in delivery tasks must be prepared to meet clients' expectations in order to increase chances of service acceptance (Dey, 2004). A courteous, friendly and adaptable attitude toward buyers can represent a competitive advantage and can differentiate the service provider from the others (*Ibid*). In addition, the adoption of a positive learning orientation[36] reduces also the risk of goal incongruence, as clients recognise signals of commitment and feel more confident about the service. The situation benefit the seller not just providing higher possibilities of service acceptance, but also increasing its choices of gaining access to the buyer's local network (Dou et al., 2010).

During the phase of service development, customers' involvement has been evaluated as extremely important (Filiatraul et al., 1997), in particular his inclusion in the service design and in the selection of service specifications (Swan et al., 2002) ease his understanding of the whole provision (Dey, 2004). Asian people appreciate the introduction of *ad hoc* studied features that increase value-added or lead to a unique service (Styles et al., 2005). Uniqueness is also more valued when the service is associated with a tangible component, like in the case of a software (*Ibid*). The ability of doing this implies the presence of personnel with high technical skills, but, at the same time, there is the necessity of great ability to protect the intellectual capital embedded in the staff's experience. Intellectual capital is a key success factor, but its protection is extremely difficult as these countries are usually prone to copy successful ideas.

Another appreciated feature is service fairness, which influences buyers' loyalty especially in those cases of huge knowledge asymmetry (Jambulingam et al., 2011). It refers to the level of justice perceived by clients (Seiders & Berry, 1998) and can be distinguished between the distributive, procedural and interactional aspects of the service (Brady & Cronin, 2001). The perception of fairness is fundamental and can be increased especially through supplier-buyers' interactions (Dey, 2014).

All these factors lead to success just if they are coupled with patience, because dealing with an unfamiliar government bureaucracy and a distant culture require time (Styles at al., 2005). Many of the firms analysed by Styles and colleagues (2005) show to have unrealistic expectations about the

[36] The definition of learning orientation is provided by Dou W., Li H., Zhou N. and Su C., (2010) and it refers to "*a set of organizational values and skills related to the propensity of an organization to create, acquire, and use new knowledge to modify its behaviour*".

time needed to establish business abroad, in addition, time pressure lead them to often misinterpreting local business practices and customs. An extensive, detailed analysis of the market does not reduce the time needed to successfully approach it, but huge efforts to integrate in the local environment and extensively adapt to local businesses' needs can increase the rate of acceptance. Finally, it is important to dispel the myth that emerging markets' interest can be gained offering low prices: it has been proved that in the service provision high quality and uniqueness account more than prices.

These results offer interesting insights regarding knowledge-intensive service providers' drivers of success in emerging markets, but they have to be evaluated and tested in relation with the specific niche market of interest. As shown by Styles and colleagues (2005), KIBS can be divided on the degree of face-to-face interactions and the degree of tangibility that can be associated with the service. Based on these variables, they identify four categories of service, which are influenced in a different manner from the abovementioned drivers of success:

- *Location-free Professional Services* are those services in which personnel do not need to establish in a specific country because the service requires a short period of time to be delivered locally and, once it has been delivered, the staff can return to the home country. This is typical of those companies that offer transportation services, environmental science consultancy, finance, insurance and market research. In this situation competitive advantage is provided by the uniqueness of the service, because the country of origin has low implications on the rare interactions.
- *Location-Bound Customized Projects* are characterized by high face-to-face interactions that last for long periods. Services provided are usually highly customized, as in the case of project management, engineering consulting and HR services. Establishment of local presence is necessary in this case and thus it is fundamental for firms to exercise high control on the subsidiaries. Particular attention should be paid to the staff interpersonal skills, that should be good enough to offer adequate customer service.
- *Standardized Service Packages* are those services that can be embedded in a tangible product, reducing the necessity of local presence and being suitable for traditional delivery through export. Emblematic examples of these categories are distance education courses, software development or testing of new equipment. Core importance has to be given to the protection of proprietary knowledge and, again, in ensuring uniqueness of the service delivered.

- *Value-added Customized Projects* are the last category and covers those activities in which the involvement of customers is fundamental for ensuring successful final result. Clear examples are on-site training, accommodation services and facilities managers. They are usually highly customized and thus require the presence of collaborative and loyal partners and networks.

This categorization offers SMEs the possibility of detecting those factors that better encounter their services' peculiarities and adapt to the target country. While presenting a particular niche sector, the following discussion presents the setting in which these drivers are going to be analysed.

Chapter 3 – Solar Photovoltaic Consultancy

3.1. Renewable Energies: The Photovoltaic

Emerging economies development is leading to continuous increase in the global demand for energy, reflecting the rapid expansion of economy. However, in 2016 one billion people are still living without access to electricity and they represent a huge catchment area for the future. Governments are concerned by these trends, in particular because of the alarming negative impacts that fossil fuels are having on the environment. In this setting, it is necessary to look at a viable alternative, like the one offered by Renewable Energies.

Renewable energies represent the 23.5% of the global electricity produced in 2015, showing a positive trend in global consumption, that has shifted from the 16.7% of 1990, to 18.3% in 2014 (IRENA, 2017). The great capacity is mostly due to hydropower (58% of the total energy produced), but also wind energy (23%) and Photovoltaic (12%) are strongly contributing (*Ibid*). Their adoption is therefore a necessity, but takes with it numerous advantages, both at a social, economic and environmental level. The latter is for sure the field in which alternative sources of energy offer the greatest benefits, as they represent a way of addressing global warming issue and a real choice for keeping temperature rise below 2 °C, while also reducing air pollution. This, of course, has important implications also on human health, especially for that part of population that is still living without electricity and that could see an alleviation of their poverty status thanks to energy introduction. In addition, renewable energies are employing 9.4 million people in 2015 and they are triggering investments worldwide (*Ibid*). In particular, solar sector has a leading role in employment, thanks to its long supply chain that requires several kinds of professionals and non-professionals. For example, the installation of 100 GW of solar PV power plant in India is expected to create 1,116,400 jobs by 2022, ranging from skilled designers and site engineers, and semi-skilled technicians, to staff in operation and maintenance positions (Kenning, 2016).

Renewable energies' growing economic impact can be seen in the increasing amount of investments, which has shifted from 50 billion USD in 2004 to USD 348 billion in 2015 (BNEF, 2016b). These levels are supposed to dramatically increase in the next few years, as 194 countries are committed through the *Paris Agreement*[37] to reach the 36% share of clean energy by 2030.

A leading role in the increase of renewable energies adoption will be played by photovoltaic (PV) systems, as they are the source subjected to more drastic drop in prices, faster technological innovation, easier installation and shorter projects' lead time (IRENA, 2016).

[37] The Paris Agreement represent the first-ever universal, legally binding global climate deal adopted on 12 December 2015 and entered into force on 4 November 2016. It implementation is considered essential for reducing emissions and build climate resilience (2030 Agenda for Sustainable Development, 2016).

The PV capacity is the fastest growing one, ranging from 39 GW in 2010 to 219 GW in 2015, which can be better understood when thinking that in 2009 only five countries had at least 1 GW of solar PV installed, while in 2015 the number of countries was set at twenty-one. The main reason is an 80% reduction of their installation costs in the last six years, which are supposed to continuously decrease by another 60% over the next 10 years (*Ibid*). In addition, PV systems boost short installation time, that ranges from few days to months, depending on the project size. These features together make solar PV suitable for the establishment in rural areas[38], where there is need of off-grid electrification (*Ibid*).

These data lead governments to expect solar PV to account for 7% of the global energy generated by 2030 and be witness to an electricity revolution, as customers can produce their own energy and feed surplus in the grid (*Ibid*). Though, transfer of ownership does also imply a change in the decision centre, as customers are now responsible of the financial investment (Zhai & Williams, 2011). In this way, decision to whether adopt or not solar PV systems deals with cultural and social prejudices, which have been discovered to strongly influence the rate of acceptance of renewable energies. Some of the most striking examples are the influences exerted by visual impact[39] or small scales adoption on purchasing decision (Wüstenhagen et al., 2007). In some cases, unfamiliarity with new technologies and risks of failure make people extremely skeptical about the adoption (Tsoutsos & Staltiboulis, 2005), while in others, people just simply prefer the status quo and they do not care about the possibility of changing (Zhai & Williams, 2011).

In this setting, a particular typology of consultants is emerged in developed countries, which support decision-makers, investors and consumers in evaluating solar PV plants' efficiency and their compliance with standards and producers' declarations. Their services turn to a niche market, as they are strictly related to the adoption of PV power plants, thus for service providers need to exploit worldwide emerging opportunities.

Next sections describe in more detail the services usually provided by solar PV consultants and identify those countries in which they have the highest profit opportunities. [40]

[38] Developing countries' rural areas are one of the greatest challenges of development, because residential areas are largely spread and it is not possible to reach it through integrated grid-systems.

[39] There is growing research on the extent to which visual impact affect customers' acceptance of renewable energies systems. In particular, in the case of wind turbines, it has been proved that their massive physical presence is the primary reason of rejection by populations (Wüstenhagen et al., 2007).

[40] As the professional profile has recently been created, literature on the theme has not already been developed. Information presented in the next sections comes from direct observation of leading players in the market and the participation of sector exhibitions.

3.2. Solar Services

The rapid emergence of solar power sector has led to strong specialization among the value chain, allowing the development of upstream segments, focused on the development and production of components, and of downstream businesses, nearer to end-customers (Landers, 2011).
The former segment is characterized by huge investments in R&D and has given rise to numerous sub-sectors, like polysilicon production, mounting & tracking hardware, electrical components manufacturing, cells and modules producers. The other category is represented by solar energy consulting, which has emerged in response to the needs of advanced figures. This professional figure is born in Germany, leading country in the PV systems, and is now spreading all around the developed countries. It can be differentiated on the basis of target customers addressed and services offered:

- On one end, there are consultants that support the installation of small scale projects, like the establishment of small rooftop PV systems on houses or small businesses. The person in charge may be an experienced installer, builder or distributor, who offer specific services related to the siting, sizing and suitability of rooftop photovoltaic systems. This category provides suggestions and guidelines to unexperienced customers, who cannot grasp the real quality and efficiency of products on their own and, consequently, they are not able to take an informed decision about PV adoption. Anyway, consultants are often producers' broker, thus their services are in many cases connected with represented products.
- On the other side, there are consultants specialized in large projects, that offer support to large business clients, utilities or public entities. They are able to provide highly specialized services aimed at testing and monitoring the efficiency of extensive power plants and they can often work as expert witnesses along the whole photovoltaic life-cycle. Despite the previous category, these consultants are independent from producers and solar panel installers, offering a *super partes* and unbiased point of view. As they do not have economic interests in selling specific equipment, they offer reliable opinions in which all the alternatives and possibilities are equally analysed and evaluated. In addition, their knowledge is not limited to technical aspects, but it is extended also to administrative and country-specific settings, ensuring a wholesale consultancy from the market study to the installation, monitoring and diagnostic tests on the PV project.

In this dissertation, we focus more on the latter category, as it is the one with highest specialization and knowledge-intensive activities. The services offered are rarely standardized and they always have

to be redesigned in accordance with customers' needs and preferences. Higher interaction and collaboration between parties exist in this case, ensuring more possibilities of technological innovation development. In addition, the pool of customers is not limited to companies who want to constitute their own energy source, but it also includes institutions, public/private investors, bank and insurance companies, that decide to finance large-scale projects. Another particular kind of customers is represented by module producers, installers, designers and material suppliers, who need expert's opinion in case of quality litigation.

Most of the services are performed in accordance with IEC and CENELEC Standards, in order to ensure quality and reliability. IEC (*International Electrotechnical Commission*)[41] is a not-for-profit, quasi-governmental organization, founded in 1906 with the aim of developing standards in the electrotechnology field; these standards are adopted by all its national members. Its initial commitment on PV energy systems dates back to 1981, when the *IEC Technical Committee (TC) 82* was founded to cover all the related matters. Today it involves thirty-nine participating countries and ten observers. It strongly co-operates with the *CENELEC Technical Committee 82*, the CENELEC group appointed to work on avoiding duplication between international and European standards. CENELC (*Comité européen de normalisation en électronique et en électrotechnique*)[42] is indeed the principal body for European standardization in the electrotechnical engineering. The fruitful collaboration between CENELEC and IEC started in 1996 with the *Dresden Agreement*, which allow common planning on new items and parallel voting since October 2016; at that time a new agreement has been signed in Frankfurt in order to reinforce the common objective and simplify the cooperation mechanisms[43]. This was necessary because of the rapid rate of technological innovation that characterize solar PV systems, in fact today there are many services that are still unregulated because of their recent creation and adoption.

In order to offer more insights on the sector under study, services are here presented on the basis of the advantages that customers gain. In particular, we can distinguish between technical valuations, certification assistance, diagnostic tests, feasibility study and initial tests.

[41] www.iec.ch

[42] www.cenelec.eu

[43] The Dresden Agreement allowed to reach 80% of identical standards between the two organizations, but the necessity of facilitating parallel voting and inserting a new reference system led to the establishment of a new one.

- *Technical Valuations*

In recent years, there is a growing number of cases in which producers are accused of manufacturing fault or installers are said to be responsible of damages[44] on panels by PV power plants' owners. As plaintiffs usually present a technical report to prove the injuries, those in the production line, that have been accused, require an independent consultant to obtain a second reliable opinion. In fact, the technicality of presented reports is sometimes questionable, as they have been developed by improvised technicians who offer their services to PV power plant owners at a low price and with the promise of avoiding them the payment of part of the signed investment amount. Consultants employed by the accused part have thus to provide a technical valuation that indicates the real state of the PV plant at the centre of the dispute and evaluate with the client the extent to which blame or liability can be apportioned to them. In the light of this, it is of extreme importance that the accused part, whether PV modules' producer or installer, trust the consultant in charge of its report. The valuation, in fact, does not only provide information about the dispute resolution, but offer a confirmation or not of the general quality offered by the part under indictment. In case damages were attributable to producers or installers, they would have to reconsider their whole *modus operandi* and evaluate, with or without the external consultant, how to prevent such scenarios to verify in the future.

- *Certification assistance*

Another case in which modules producers rely on independent consultants is when they need support in the certification process[45]. Consultants can offer their technical knowledge and work as interface between testing laboratories and certification bodies. Advices are often required to determine the most suitable tests to conduct, especially when producers want to introduce changes in the cell technology[46]. Support can be required also to establish an internal testing laboratory in order to check modules' compliance with relative standards before the external inspection. Emblematic example is

[44] Loss of efficiency of solar panels could be the result of manufacturing defects, but they may also be caused by various misbehaviours like unpacked transportation (in which modules are piled on each other), wrong handling during installation, use of hooks in the fixing, incorrect cleaning method and walking on modules (Idolazzi, 2014).

[45] All solar panels should be certified according with IEC Standards in order to provide customers guarantees of their safety conditions (IEC 61730) and resistance to specific weather events. For example, panels that have to be installed in proximity to the sea should be resistant to salt mist corrosion (IEC 61701), while those that may have to resist to large amount of snow should be certified in line with 5400Pa. CE (*Conformité Européenne*) is a mandatory mark in European Economic Area, while in USA it is necessary to have NRTL (*Nationally Recognized Testing Laboratory*) mark on panels to be allowed to sell them (De Rooij, 2010). These certifications are not mandatory in other parts of the world, but their presence could represent a competitive advantage and a guarantee of equipment reliability.

[46] This is a peculiar case regulated by *IEC Retest Guideline,* in which there is no clear identification of the tests that have to be conducted in order to prove "*efficiency and technology improvements*". Thus, consultants have a fundamental role in identifying those tests that better demonstrate the advancements, while closely collaborating with producers.

represented by the support needed in conducting safety tests[47] on prototypes. This matter is highly regulated at international level and has recently been updated through modifications on the IEC 61730-1, -2 standards. As it has not already been transposed into national legislations, consultants have a key role in reducing uncertainty and guiding modules producers.

Consultants that offer this kind of services may also extend it to other categories of products, in particular those in the electronic, electricity and mechanical field, but there are also cases in which assistance is provided also for automotive, military and aerospace components that need certification.[48] In this situation, consultants should be viewed as a critical partner, able to ensure a straightforward certification process to its client, thanks to its long experience in dealing with certification bodies and tasting laboratories. Modules' producers may, in fact, be scared by the complexities which need to be addressed in order to gain that attestation, but the presence of an independent professional figure can offer guidelines and reduce uncertainty, increasing also the chances of meeting all the required criteria on the first try.

- *Diagnostic tests*

While the abovementioned services refer in particular to clients that belong to the upstream segment of the PV value chain, diagnostic tests are equipment-based services that can be requested by both manufacturers/installers and end-customers[49].

Modules' producers may decide to conduct diagnostic tests on their product in order to ensure that every stage in the production process does not ruin modules, or they may decide to verify modules' conditions just at the end of production. This decision may derive from a dispute in which the producer has been evaluated responsible of modules' damages[50] or it may simply be the desire of a firm to ensure the highest quality in its production process.

Investors, bank and insurance companies, instead, may decide to evaluate the status of the PV power plant before choosing to invest on it. In this case, it is of primary importance that consultant is perceived as truly independent from modules' producers/installers, as commitment decision is going to be completely taken on the basis of the diagnostic report written by him. Therefore, preference is

[47] Safety standards regulate those tests that must be performed to reduce risks of electrical, mechanical, thermal and fire hazards (Arndt & Puto, 2010). Some of tests are conducted before modules production, on prototypes, while others have to be ruined on-site, during initial characterization.

[48] This information has been gained through the observation of various service providers' websites (an important example can be provided by https://services.1kiwa.com/). Existing literature does not mention this kind of service connection.

[49] This term does not indicate only PV power plant owners, but also investors, public authorities and whoever has a licit interest in knowing the power plant real conditions.

[50] Reference is to the abovementioned case in which modules' producers are accused of selling damaged products and, in a hypothetical scenario, the verification conducted by the independent consultant has demonstrated that there is a form of liability.

given to that consultancy that inspire confidence and boost a brand name characterized by an internationally recognized positive reputation.

Last kind of clients is represented by PV power plant owners, who may decide to inspect all the modules' components since they still are in the factory, before installation, during the whole product life-cycle[51] or just when they notice a loss of efficiency and want to identify its reason. In those cases in which the diagnostic services are required as preventive measures, independency is again considered a fundamental characteristic, as the consultant is expected to inspect the selected products while they still are in the factory. Thus, interpersonal relations between service provider and client should be characterized by integrity, trust and confidence. In addition, the insights gained through diagnostic services have not just an informative value, but they offer the opportunity of discover potential detriment. In fact, if there are suspects of inefficiency since the beginning, the consultant can figure out any little detail and offer owner the possibility of recovering the damage[52] and being compensated.

In order to detect defects on modules and on the other components of the PV power plant, the performance of highly specialized tests is required, which expects the adoption of advanced technologies. The most useful for the identification of underperforming cells or panels are electroluminescence (EL), I-V curve measurement and thermography.

a. **Electroluminescence** represents the most advanced test for the detection of micro cracks, degradation and shunted areas, that are not detectable with visual inspection, allowing the restoring of initial efficiency levels. It is usually performed on a limited number of panels of the whole PV power plant, which can be randomly selected or previously indicated from the owner, in case anomalies have been identified. The number of panels inspected usually ranges from 3% to 10%, depending on customer's requirements and size of the PV power plant.

   As figure 3 shows, EL represents a sort of "*radiography*" of a PV module, in which dark areas indicate zones electrically isolated (Idolazzi, 2014).

   In the first years in which this methodology of defects' detection was discovered, the test was usually developed in laboratories, after removing panels from the plant. Though, this practise had led to numerous contentious issues on who had caused the damages discovered through inspection. Transportation and manipulation necessary to perform the test could, in effect, cause additional cracks on cells respect to the existing ones. Today, these tests are conducted

[51] Diagnostic services can be adopted as a preventive measure which allows to monitor PV power plant conditions at a particular frequency (usually on an annual base).

[52] This represents the situation reversed in comparison with that presented in the beginning. Here, in fact, it is the owner that decides to employ consultant in order to check that products meet producer's declarations. Thus, consultants can work as expertise witness for both sides.

with all the parts involved in potential litigation ensuring the highest reliability of measures. In addition, during times, various researchers identified the way of adopting small and easily transportable DSLR Cameras for performing analysis on-site and, thus, today improvements in technology have reduced risk of litigation, while also decreasing costs and making the inspection easier and faster.

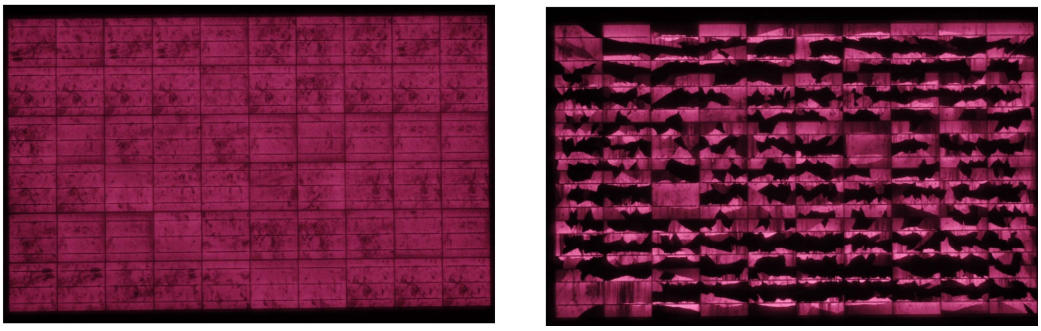

Fig. 3: EL of an efficient panel (left) and a damaged one (right) (Idolazzi, 2014)

b. When whole cells break down there is the risk that local faults warm and overheat, creating the so-called *hotspots*. They often arise as a result of dirty and dust concentrated on a small part of a modules' cell, but they can be due also to cell's manufacturing defects or the presence of shadow[53] on modules; this condition can be avoided when appropriate shadow studies are conducted during the feasibility phase (Idolazzi, 2014). The presence of these critical points cause a decrease in power production and may lead to possible fires in case of contact with flammable material, as they can reach a temperature of 100 °C. Their identification in time is thus fundamental in order to reduce large-scale damages. Their detection can be achieved through **thermography measure** (IEC 61215:2016), a test performed through very precise thermography cameras equipped with telephoto lenses or wide-angle-lenses.

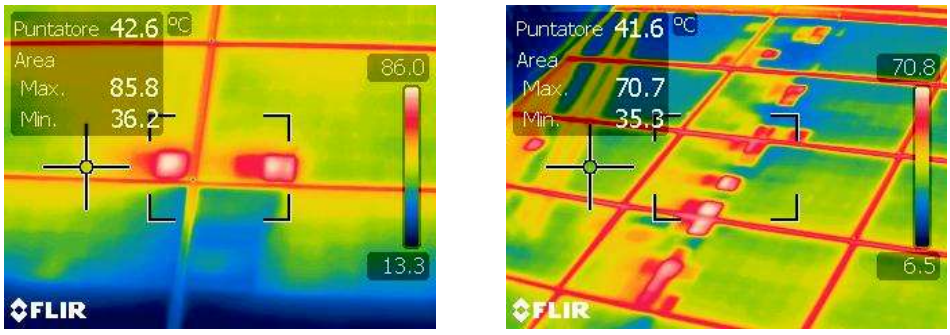

Fig. 4: Two examples of Hotspots caused by cell's defect (left) and shadow (right) (Idolazzi, 2014).

[53] During the qualification of potential site is fundamental to correctly estimate the risk of shadows because their presence makes modules working as loads instead of power generators (Silvestre & Chouder, 2007).

As figure 4 shows, hotspots appear as red coloured parts of the pic, but even if they may seem easily identifiable, a deep understanding of photovoltaic installations as well as physical regularities are needed to correctly analyse thermal images.

c. The last test usually conducted in diagnostic services is the **analysis of I-V curve** (IEC 60904-1:2006), which allows to analyse modules' performances while looking at current and voltage spectrum. The I-V Curve shape offers important insights[54] just when it is evaluated in its completeness, in fact, as shown by fig. 5, the short circuit current (Isc) and the maximum power voltage (Voc) measurement are not sufficient when analysing a damaged or shadowed module.

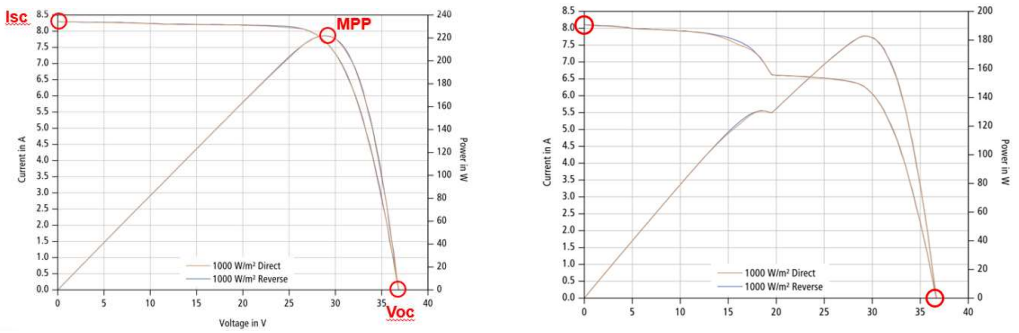

Fig. 5: I-V curve of a well performing (left) and a damaged module (right). (Idolazzi, 2014)

Though, this analysis can be performed also in the early stages of adoption of a PV systems, in order to evaluate if performances declared by producers are truly met by modules that are going to be bought.

Whatever the applicant for these services, their performance always lead to the development of technical reports, which represent the tangible part of service performance. As already said in §2.5.2., the presence of a tangible final product makes consultancy more appreciated by those clients from emerging economies, in which intangibility is often perceived as valueless. In addition, all the reports present reference to the international standards followed and the sign of the consultant, which work as guarantee of reliability in comparison with those services in which information are mostly exchanged in a verbal manner.

[54] This analysis allows the measurement of the following parameters: Open circuit voltage (Uoc), Short Circuit Current (I_{SC}), Maximum Power (P_{MPP}), Maximum Power Voltage (U_{MPP}), Maximum Power current (I_{MPP}), Fill Factor (FF). (Venchi, 2012)

- *Feasibility study*

Feasibility study refers to all those activities performed before installation, in order to understand end-users' needs, make a qualification of the potential site, identify the most suitable equipment and verify shadow risks. PV power plants can be installed in very different locations[55], in a grid-connected or stand-alone manner and they can require different kind of financing or be recipient of public funds. All these differences have to be analysed by competent staff who can support the decision maker in taking an informed decision and prevent bad investments. This kind of services can be offered also by those PV consultants that are focused on small projects, meaning that even that professional figures may have similar competences in the setting-up of new PV power plant. Of course, the size of the establishing plant brings with it different degrees of complexity and, thus, rarely a person experienced in small systems can successfully shift to the implementation of extensive ones. But those specialized in B2B business can easily manage both kinds of projects, offering additional advantages also to residential and small clients. In fact, as already mentioned at the beginning of this paragraph, the most important difference between the two categories lies in the presence or absence of economic interests in selling a specific brand of panels and components. Thus, while PV producers' agents could be prone to direct interest toward most expensive/most advanced technologies, without really considering the end-users' needs, the advices provided by an independent consultant are for sure more reliable, in particular in respect to the identification of the most suitable equipment. In fact, this kind of consultants benefit only from the sale of their services, which are independent from the quality and the price of the selected products. Customers have, thus, higher advantages in choosing independent consultants, as they will be truly guided to products with the best value for money and they will receive updated and disinterested opinion. Drawback is, though, that these consultants' loyalty needs to be paid more than the others.

- *Initial tests*

Cold testing session and initial characterization are, instead, two phases that follow the setting-up of PV modules and include the first inspections on the PV power plant. In the former, the plant is turned off and there is just a visual inspection of the equipment (IEC 61215: 2016), which allows the identification and location of visual defects that could affect the performance of PV modules; in the latter, the plant is put into service and acceptance tests are conducted. The number of tests performed could vary on the basis of customers' requirements, ranging from safety tests, to performance analysis, to all the diagnostic tests previously mentioned.

[55] Today modules can be installed in various areas, like ground, rooftop, curved space, on a pole or on the front of a building.

Safety tests (IEC 61730:2016) conducted on installed modules are different from those that are performed on producers' prototypes, in fact, insulation resistance test and ground-continuity are those most required in this context. The former aims to evaluate if modules are sufficiently insulated between the frame and current-carrying parts, while the latter verifies that all the accessible conductive parts are connected to an external grounding (*earthing*) system (Ball, 2011).

Performance analysis is the most suitable test for the start-up phase, as it allows to verify that all the system's performances are in line with those declared by the producer, while analysing every part of the PV power plant[56]. Through the adoption of an instrument that connects together a pyranometer, which has an irradiation sensor, and a current and a voltage sensor, consultants can measure actual performance both from the DC side (in order to evaluate PV modules' performance) and AC side (connection with mains) of the inverter. The comparison of these data with those reported on the PV module's data sheet offers important insights about the efficiency of the whole PV power plant. In some cases, also all the diagnostic tests can be performed in order to verify initial efficiency and offer technical data for questioning producers' products in case of unmatched standards.

These represent important opportunities for PV power plant owners to ensure value for money. It is important to notice that in this situation, the consultant is presented as someone trustworthy and mutual trust represent a necessary prerequisite for fruitful cooperation. As this service can be addressed just to first days of PV plant life, the establishment of a good professional relationship lays the foundation for further collaborations in the future or allows the creation of an independent brand ambassador. Very often, in fact, positive experiences are spread through word-of-mouth and create a profitable network for consultants.

All the above-mentioned services represent just a limited part of the broad range of alternatives available, but we restrict the focus on these, as they are those that can better satisfy needs of different stakeholders. However, their appropriateness to a vast category of subjects is tied with suppliers' ability to adapt service provision to the PV power plant issues, customers' needs and size of the plant. In light of this, strong client-supplier interactions are required and their successful development may lead to the establishment of long-term relations.

Today solar PV consultants are offering their services especially in developed markets but, as next paragraph highlights, new countries are now enlarging their installation pool of PV systems, offering huge market opportunities to service providers.

[56] When setting up a new power plant it is important to evaluate that also inverter, cables, accumulator, voltage regulator and power generator are efficient and in line with rated output of the installation.

3.3. Market Opportunities

Solar PV installation base has generally been considered higher in developed countries than developing one, but data on 2015 PV capacity by country show that they have evened (Kanellos, 2016). The main reason of this change is the scope of photovoltaic installation: in fact, while developed countries adopt it in commercial projects, less advanced countries emphasize it on a utility scale (*Ibid*).

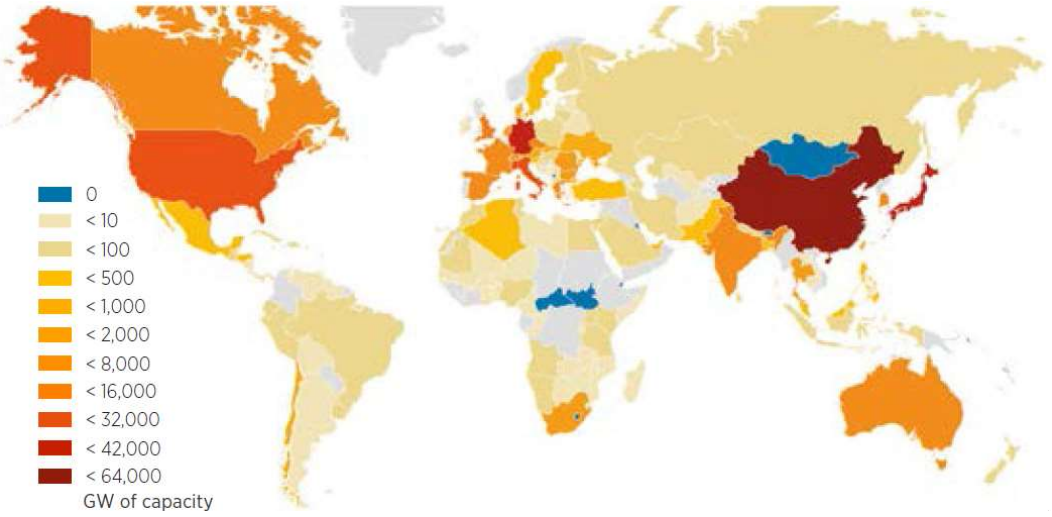

Fig. 6: Installed PV capacity in 2015 (IRENA, 2016j)

The highest presence of clean energies in developed countries was traditionally due to high costs of technologies, but, thanks to decrease of modules' prices, solar power represents an interesting alternative also for the rest of the world. More than that, USA and EU's requests for further installation are expected to decrease, while that of developing countries is going to increase at cruising speed (*Ibid*). These forecasts are based on observation of the numerous targets that developing countries are setting for next few years. For example, India has planned to reach 100 GW of PV capacity by 2020 (Ross, 2016), in the same year Chile expect to achieve 7 GW, while South Africa yearns for 8.3 GW by 2030 (SMA, 2012). Also some of the countries responsible for the highest levels of air pollution are committing themselves to renewable energies, like China, who stated its goal is to produce 50% of power from renewable energies, or Mexico, that promise 40% of green energies by 2035.

These data present important profit opportunities for solar PV consultants from developed countries, who can exploit their advanced knowledge and proven experience in countries that are just taking their first steps in the photovoltaic world. Local companies have not already developed the abovementioned services, as they are mostly focused on production and installation. Thus, foreign consultants can encourage and accelerate the acceptance rate of these systems while providing their

advices during feasibility phase and reducing the uncertainty perceived by local modules' owners and investors.

More than that, the rapid rate of PV installation of the last years has also increased profit potential of foreign experts in the provision of diagnostic services. In fact, fast skilled workforce development is not coupling PV demand, increasing the risk of large-scale damages on solar modules[57]. Installers are often considered semi-skilled or un-skilled figures at a world-wide basis, but in the markets where PV has reached a large growth, there exist training and certification schemas (PVTRIN, 2011). Part of their work is evaluated at builder level, but wrong handling by untrained personnel could cause incalculable damages for the whole PV power plant life.

Achievement of profitable collaboration assumes that a relationship of mutual trust exists between consultant and client, condition that rarely verifies in developing countries, because of the high rate of corruption. In respect of this, being foreign may represent an advantage, as it could seem more difficult to bribe a person external to the local network. Clients may, thus, attribute higher reliability to consultants that have a worldwide experience and are not assimilated into local society, but it is still difficult to understand which would be the degree to which mutual trust relationships could be developed.

In addition, there are, numerous disadvantages connected to the difficulty of building strong relations between people characterized by completely different background. Even more difficult to overcome is, then, the presence of inadequate infrastructure, the local lack of laws and regulations in the renewable energy sector and the complicated bureaucracy that often contradicts developing countries (SMA, 2012).

From a more technical point of view, there is also the necessity of adapting services to countries' peculiarities, as most of developing countries are located near to Equator and are characterized by particular weather conditions. Extreme altitude, heat, monsoon rains are just some of the challenges to which solar panels shall undergo (*Ibid*).

Consultants have, thus, to decide whether to approach these markets or not, with the chance of gaining huge returns, but also of being overwhelmed by the complexities typical of developing countries. Ability to innovate and cooperate with local clients will represent a key success factor, but service suppliers will have to be prepared to overcome important cultural, administrative, geographical and economic issues.

[57] As explained in the previous paragraph, wrong transportation, packaging, handling and installation cause serious damages on solar panels and consequent loss of efficiency. Once PV power plant owners and investors will start noticing low performances, consultants will face high profit opportunities thanks to their ability to identify issues and support maintenance practices.

Chapter 4 – Methodology

4.1. Research approach

This dissertation examines a topic recently formed, that is poorly addressed at literature level. Its novelty has led to the selection of abductive reasoning as research approach, instead of more traditional deductive or inductive approaches.

Deductive approach is adopted for testing theories through the acquisition of huge amount of empirical data (Saunders, Lewis & Thornhill, 2009). In the deductive process hypothesis are formulated on the basis of a solid theoretically anchored starting-point and are then tested leading to confirmation or rejection of the initial statements. The reasoning moves from general to specific, through a causality link. The framework adopted for interpreting data is tight and pre-structured, risking to blind the researcher or lead to wrong interpretations (Miles and Huberman, 1994).

From the opposite side, there is the inductive approach, which allows the development of new theories and generalisations starting from observation of empirical data. The research is not developed on the basis of pre-determined hypothesis, but it moves from the identification of a problem or situation that needs to be explored and proceeds through a loose theoretical framework (Miles and Huberman, 1994). As the starting point is represented by a large amount of independent cases, the researcher collects qualitative data through an open minded, which means that he has to be open to new experiences and shall not affect connections and conclusions through his previous experiences (Jacobsen, 2003).

When the focus is on case study observation, the abduction reasoning has been recognized as the most suitable approach (Alvesson & Sköldberg, 2007), as it allows to interpret empirical cases through the adoption of a hypothetical pattern. Its cornerstone is represented by an evolving framework, in which concepts are used as a guideline for analysing the empirical world (Bryman, 1995) allowing the researcher to discover new things. Despite the theory *generation* function of inductive approach, the abductive one allows theory *development*, serving as refinement of existing theories and not as inventor (Dubois & Gadde, 2002). As stated by Eisenhardt (1989, p.549), "*the accumulation of knowledge involves a continual cycling between theory and data*"[58], explaining that empirical findings and theories are continuously integrated in an attempt to match them, without forcing data into categories, but reframing perceptions in order to reconcile contradictions (Dubois & Gadde, 2002).

[58]Eisenhardt K.M., (1989), *Building Theory from Case Study Research*, The Academy of Management Review, Vol. 14 (4), pp. 532-550;

This research adopts the abductive approach because of the iterative process through which empirical findings and well-established theories have been combined on the topic of interest. The selected logic allowed a gradual development of conceptual explanations and empirical findings throughout the study. In fact, researcher is enabled to go "*back and forth*" from observation and theory (*Ibid*) and the developing framework can be constantly adapted to unplanned issues that arise from observation. This feature is of extreme importance in case study research, as it allows flexibility in the whole process. In this specific case, I have proceeded from the detection of an "*incomplete observation*"[59] and I have, then, analysed existing theories about internationalization, with a particular focus on KIBS, and strategies to enter emerging markets. As suggested by Alvesson and Sköldberg (2007), I have not delimited the research area to predetermined theories, but I used them as a source of inspiration and a guiding pre-understanding of basic phenomenon.

4.2. Research method

The selection of the research method was made on the basis of the dissertation scope: in fact, while quantitative method is suitable for quantify opinion, behaviours and other variables that have been analysed on a large sample population, qualitative method is adopted for deepening problems and reaching explanations. The former is conducted by an objective researcher that has clearly designed hypothesis worth examining through the adoption of questionnaires or other tools that allow numerical data collection. Qualitative method, instead, aims at understanding how different scenarios affect each other and people behaviour (Merriam, 2009), focusing on the meaning of words and contextual factors that are grasped through interviews and observations (Patel & Davidsson, 2003).

The objective of this dissertation is an in-depth observation of a new complex and understudied phenomenon, which lends itself to a qualitative method. As interactions play a key-role in KIBS internationalization, qualitative research offers a more profound understanding of reality, providing rich data about real life situations, people and interactions. Though, this peculiarity makes conclusions difficult to be generalised (Vaus, 2002), as researcher is assumed to infer his personal interpretations to the information provided by interviewees. More than that, informants offer subjective explanation of the studied situation, leading to empirical findings that can sometimes be extremely open and ambiguous (Alvesson & Sköldberg, 2007).

Interviews represent the primary source of information and the starting point for further analysis. This tool implies social interactions and it should be performed through personal face-to-face meetings, in order to ensure the highest researcher *closeness* to respondents (Repstad, 2007). This setting allows

[59] Bryman and Bell (2015) explained that abduction research starts when "*incomplete observation*" "*surprising facts*" or "*puzzles*" are discovered and a researcher aims to give it an explanation.

researcher to grasp all the contextual elements that permit the development of a detailed and complete picture. In this case, it has not been possible to conduct all interviews in person, but the adoption of Skype has recently been evaluated as valuable as traditional face-to-face interactions, as it can portray a rosier picture of interviewee's real life too (Sullivan, 2002), offering the possibility of evaluating also non-verbal aspects of communication[60]. According with Yamagata-Lynch (2010), observation of participants' interactions represents a fundamental source of information and the researcher must take notes or record them. Another important qualitative method is, then, document analysis, as the researcher must be informed on all the materials that describe and analyse the research issue, whether they are reports or publications (*Ibid*). In this case, a large number of documents has been evaluated, in order to understand the macro-context, looking at cultural, administrative, geographic and economic environment at a country-level, but also the more specific setting in which solar PV services operate.

Fundamental feature of a successful qualitative analysis is flexibility. According with Repstad (2007), interviews should be conducted in an open manner, without the adoption of a structured template. Every interview can offer numerous underestimated thought-provoking ideas, which can be deepened in the successive conversations. In this way, template is adopted just as a guide from which deviate adjusting to respondent situation and answers (Patton, 2002), leading often to an unpredictable outcome (Starrin & Svensson, 1996). In accordance with Larsen (2009), I believe that this approach has prevented the risk of misunderstanding, in fact the possibility of integrating the interview with spontaneous and open questions allowed to immediately clarify potential loose ends.

4.3. Research Strategy

In order to study complex phenomena within their context, the adoption of a case study methodology provides the most suitable tools. Yin (2003) explains that case study research should be selected when the researcher aims to investigate "*how*" and "*why*" of a particular phenomenon, or when there are no clearly defined boundaries between the phenomenon and the context. Case study strategy is supported by abductive approach, as it allows to develop a framework while continuously investigating, analysing and interpreting empirical world in the light of theory (Dubois & Gadde, 2002). The emerging case of KIBS internationalization into emerging markets represents a field to which deal with adopting a case study approach. Emerging market environment is, therefore, characterized by

[60] According with Hall (1976), non-verbal aspects of communication refer to all messages that are not explicitly coded in the words pronounced. Gestures, gesticulations and facial expressions are just a small portion of unintended communication, most is also expressed through environmental components or the circumstances of the conversation (as the type of place selected by the interviewee, the organization of the space, the time frame).

high complexities, which represent barriers for KIBS interested in expanding in these markets and develop profitable business relations.

According with Yin (2003) and Stake (1995), the breadth and the depth of case study should be defined while placing boundaries on its scope. Following their suggestions, I have limited the study in terms of place and activity because, as already explained[61], emerging markets differ in many essential aspects and the necessity faced by foreign firms of analysing business environment in detail cannot reconcile with it. Thus, solar PV consulting firms have been selected as the KIBS typology under study, in particular because of its recent emergence and consequent missing literature on it. Additional limitation is, then, provided by the market of interest, which has been constrained to India, thanks to its ambitious project of photovoltaic development[62] and its economic and cultural complexities.

Following Yin (2003), it is important also to determine the type of case study that is conducted, which can be described as explanatory, exploratory and descriptive. The first kind is adopted when the situation is too complex for a quantitative analysis, but the scope is similar, as it attempts to explain the presumed causal links determined on the basis of extensive literature review. In the exploratory case, indeed, data are examined at a deeper level and the researcher is not expecting a single set of outcomes. Descriptive case studies are, then, those in which the focus is on the context surrounding the studied phenomenon and the researcher aims at describing it without excessive analysis of its reasons. This research adopts an exploratory case study strategy, as it allows to directly observe the phenomenon in its natural form (Glaser & Strauss, 1967) determining in the early stages just the broad features of the final study (Yin, 2012). In terms of design, I have selected a single case study strategy, but different units of analysis have been considered, adopting a so-called *embedded case study design* (Yin, 2003). Starting from the analysis of a company set in Italy, I have investigated the way it should approach India, while interviewing the CEO, the firm's local agent and Indian potential clients, trying to grasp all the internal and external factors that could affect its success rate. Particular attention is paid to understand how potential clients make decisions and in which way this can influence the strategy formulation of Italian service providers. In this respect, embedded case study design constitutes an unavoidable choice, as it allows to understand and grasp the whole picture in the organization, leadership process and within international relationships (*Ibid*).

The main unit is represented by the case company, Synertechnik S.a.s., under which there are three subunits identifiable in the CEO, an internal collaborator and four external potential clients. According with Yin (2003), this kind of design offers important opportunities for extensive analysis, but particular attention has to be paid to the holistic picture in the end. Sometimes, in fact, there is the risk that

[61] For further details see §2.4 – Emerging markets' environment.

[62] Further information about photovoltaic adoption in India are provided in chapter 5.

researchers lose the whole picture and forget to go back to the larger unit of analysis, while gaining significant subunits' insights. In order to avoid the risk, I decided to use information gained from subunits' respondents as inputs for making conclusions about the company strategy.
The choice of the company under study fell on Synertechnik S.a.s. for several reasons: first of all, it represents a young corporation that adopts a born global internationalization path; in addition, it is interested in expanding in Asia, starting from India. As it actually has not operations in the target market, it gave us the possibility of following the whole strategy formulation phase and understand which are the most critical changes the company has to introduce in order to meet Indian clients' needs. Another important factor is then the possibility of adopting a participative-observation, thanks to the permission of shadowing management during the expansion project development.

4.4. Data Collection

The selection of a qualitative research method allows access to the thoughts and feelings of research participants, which can be grasped just adopting methods of data collection that are flexible and sensitive to the social context (Hox & Boeije, 2005). According with Merriam (2009) this purpose is served by the adoption of interviews, observations and documents.
In this research, we have selected participative observation and interviews as primary data, while documents, articles and reports represent secondary data.

4.4.1. Primary Data

Primary data sources are determined on the basis of the specific research problems' needs (Hox & Boeije, 2005) and represent eyewitnesses (Patel & Davidson, 2003), as they offer direct evidence on the topic under investigation.
In this thesis, primary data have been provided in particular through participative observation, which has been described by DeWalt and DeWalt (2002, p. VII) as fieldwork where "*active looking, improving memory, informal interviewing, writing detailed field notes, and perhaps most importantly, patience*"[63] are performed. The involvement into day-to-day routines allows researcher to learn about the activities while observing them directly in the natural setting. This represent an extremely useful method for understanding complex environments and check consistency of declared activities with those truly performed (Marshall & Rossman, 1995). In addition, it allows to discover information that interviewees may have considered to be not interesting to be communicated (*Ibid*).

[63] DeWalt, K.M., DeWalt B.R., (2002), *Participant observation: a guide for fieldworkers*, Walnut Creek, CA: AltaMira Press.

In this study, participative observation has been conducted within the company under study, not only during normal working days, but also in particular situations. For example, while shadowing the CEO at an international sector exhibition and taking part to various commercial meetings with national and international partners, important information regarding the company's public relations polices have been gained.

This kind of data source has not been adopted, indeed, in regard to potential customers and the internal collaborator, which have just been contacted for interviews through Skype. Interviews are, indeed, the second source of primary data, which were organized in a semi-structured manner. Semi-structured interview is the most common method adopted in qualitative researches (Merriam, 2009), as it allows to determine a number of questions to be used as template. However, interviewer can deviate from them, proposing additional spontaneous questions. According with Patton (2002), some pre-set guiding questions can be essentials for collecting data, as they allow comparisons between different informants interviewed. I choose to embrace this method, developing three different templates for the CEO, the internal collaborator and potential customers, in order to offer appropriate avenues to be explored. Questions have generally been kept open, defining only the topic in broad terms and giving informants the possibility of communicating me all those details that they perceived as interesting and worthy of note.

4.4.2. Secondary Data

Secondary data are those data and information gathered by someone also, or those developed for purposes other than that of the conducted research, or they can also be a combination of both (Cnossen, 1997). According with Novak (1996), they can represent a baseline for evaluating empirical primary data, which is why they should always be collected before starting research activity. As they refer to existing literature, official statistics, technical reports, reference books and many other sources (Shell, 1997), the researcher must be extremely critical in the evaluation and selection of valuable and relevant sources (Merriam, 2009).

In this research, the selection of literature articles and books has been made from the material available at the Ca' Foscary University library, in particular in the Economic Area[64]. The decision of constraining sources has been made to ensure higher quality and reliability of literature.

Additional data have, then, be gained through documents downloaded from internationally recognized websites. More in detail, Governmental and document developed by internationally recognized organizations have been considered for analysing International and Indian standards, while technical reports and firms' websites have been studied for the analysis of the solar PV sector.

[64] Ca' Foscari University – BEC (Biblioteca di Area Economica).

All these data have represented an important source of information as they clarified the state of current literature development on the topic and they allowed the identification of critical areas of interest. During literature review, key questions emerged, which were then further investigated by including them in the interviews' templates.

4.5. Research Limitations

Qualitative researches are generally more criticized than quantitative ones, as reachable conclusions are considered biased by the researcher interpretation and they are representative of a too much small sample, in particular when they are based on a case study research method. Nonetheless, according with Eriksson and Kovalainen (2008), the goodness of a qualitative research could be evaluated, like for any other research, on the basis of validity and reliability.

- *Validity*

Validity refers to the consistency of final results with the research demand and scope (Patel & Davidsson (2003). In this respect, it is important to clearly explain which is the intended purpose of the thesis and present final conclusions following that reasoning (Thurèn, 2009). In this dissertation, a detailed background of the purpose and research question is provided in the introduction, which is then in deep articulated through the presentation of linked existing literature. Final conclusions aim to present empirical findings adopting the same structure identified in the beginning. In fact, according with Yin (2009), while connecting empirical data with relevant theories, internal validity can be demonstrated.

External validity, indeed, refers to representativeness, that is the extent to which findings can be generalised (LeCompte & Goetz, 1982). This is extremely difficult to achieve when case study researches are conducted, in addition, the choice of a single case study design and the selection of a complex target market, like India, makes generalization even more difficult. However, I believe that the technicity of the sector could mitigate the impossibility of expanding findings to other situations and I expect that some other companies, with similar structure, could embrace research's conclusions.

To evaluate validity from an overall perspective, it is important to consider *authenticity*, *credibility, representativeness and significance of the content* (Denscombe, 1998). Authenticity implies that documents have not been falsified, which can be demonstrated through interviews registration and the presence of reference for every cited document. Credibility, instead, refers to the objectivity of data presented and can rarely be perfectly presented in qualitative researches because of the necessity of interpreting empirical data (*Ibid*). Researcher, in fact, may be too involved in the study and reach conclusions that others would have not. In this respect, I was, thus, aware of the risk of inferring my judgments in the evaluation of empirical data and I have tried to adopt a distanced approach during

the whole analysis. Finally, significance of the content refers to the understandability and explicitness, which has been provided while constantly bringing drafts to the attention of the supervisor and modifying those parts that could have been appeared cryptic.

- *Reliability*

The second criteria that qualitative research should fulfil is reliability, which refers to the replicability of results (Zikmund, 2000). According with Eriksson and Kovalainen (2008), measures, procedures and instruments adopted in a reliable research should lead to the same results on repeated trials. This aspect represents a huge challenge in qualitative studies, as current world is characterised by continuous changing situations and it is, thus, not possible to repeat a study and gain the same results (Christensen, 1998). Thurèn (2009), however, stated that a sufficient extensive research and the proposal of the same questions to all the interviewed informants ensure higher credibility in the reader. According with this, I have completed a sufficient literature review and have obtained empirical data through participative observation and the conduction of two formal interview within the corporation[65] and four external interviews. In addition, registration and replay of virtual meetings has increased the level of reliability (Merriam, 2009), as they allowed to notice details that may have been lost during interviews.

[65] Most of the data presented about the case company have been collected during the physical presence within the firms, thus many questions have been posed in an unformal manner, but answers have always immediately been written down.

Chapter 5 – Empirical Data

5.1. Synertechnik S.a.s.[66]

Synertechnik is an Italian firm that offers various types of technical consultancy at a worldwide level. Thanks to its born global approach and its continuous expansion in new countries, it has been selected as reference company for investigating the Indian market. After ten months of activities of cooperation with the CEO, Mr Marco Idolazzi, and a formal interview aimed at clarifying undiscovered aspects of Synertechnik *modus operandi*, next paragraphs describe in detail the company's organization, its service provision and the internationalization strategy.

5.1.1. Company overview

Synertechnik has been founded by Mr Marco Idolazzi as individual society in 2008, but it was successively transformed in a limited partnership in 2010, leading to the creation of Synertechnik S.a.s.. Despite the changing business structure, the firm has always performed similar activities among years. Synertechnik resulted from an extreme downsizing of Mr Idolazzi previously existing corporation, which was specialized in R&D and used to develop equipment able to meet the fast-changing requirements of international laws on electricity, mechanics, chemical and flammability. The firm in existence today represents a one-person business, in which most of the administrative and technical activities are outsourced worldwide, and numerous external collaborations are developed in order to carry on commercial and marketing activities. The firm, in fact, does not have direct employees, but it establishes cooperation contracts and agreements with various professionals and firms, which allows it to access foreign market knowledge and specialized competences. Administrative co-operators are selected in the home country, with the aim of providing assistance on accounting and balance sheets, while commercial promoters are mostly foreigners and sometimes arise spontaneously after satisfying business experiences, while in other cases are trusted professionals who take part in exhibitions and international fairs as Synertechnik's agents. The majority of the services offered to clients on a worldwide basis are, instead, directly performed by the CEO, who continuously travel to offer his direct support on site. Anyway, in some cases also some Italian or foreign consultants provide services on behalf of Mr Idolazzi, but they are all trusted and reliable professionals that boost long-lasting business relations with the firms and who have deep experience in the sector.

Despite a small headquarter set in Cartura, in the province of Padova (IT), may give the impression of a small firm, Synertechnik services are offered on a worldwide scale, ranging from France, Germany,

[66] http://www.synertechnik.com/

Switzerland, to China, Canada and Saudi Arabia, with a percentage of foreign operations that accounts for the 90% of its annual turnover.

The decision of adopting this peculiar structure and the ability of working at international level comes from Mr Idolazzi background: A proactive entrepreneur with a global mindset, who started his career from a course of electromagnetic compatibility at the University of Padova (IT), but who developed the majority of his competences and skills while working on the field. After being selected from Eurotest[67] as technician in test procedures, he showed extraordinary attitude to problem solving and R&D, obtaining a unique position in the development of niche technical equipment. The peculiarity of the sector obliged him to travel, in particular at European level, allowing the development of interactional skills expendable in international environments. Over the years, photovoltaic technologies appeared on the international scene and Mr Idolazzi grasped the opportunity for researching in the field and establishing himself as a professional consultant. This new focus allowed him to travel the world, from USA, Canada, to Europe, China, Taiwan and other Asiatic countries, since the decision of becoming self-employed and funding the antecedent company of Synertechnik.

Once he decided to reinvent his business, funding Synertechnik, he chose to focus on PV consultancy, making it his core business. Thanks to his worldwide recognized expertise in PV technologies, Mr Idolazzi new business obtained the advantage of a global network since the beginning, connecting together the whole figures that take part in the value chain, from production to final customers. The previous employment, in fact, gave him high exposure at a worldwide level and allowed him to establish contacts with the most recognized testing laboratory, certification bodies, international committee for standard-setting, modules and electrical equipment producers, but also with other independent professionals willing to establish cooperation for increasing innovation rate. Additional prestige was gained when in 2011 TÜV[68] required him as inspector, allowing him to enlarge the network of contacts and establish closer relations with modules' producers.

All these collaborations, in particular those with modules producers and PV power plant owners, allowed Mr Idolazzi to understand the necessity of diagnostic services, able to offer reliable information about the efficiency of modules production lines and verify the absence of damages before and during installation. PV power plant owners and investors were previously unable to check modules' efficiency, while, at the same time, modules producers were unable to demonstrate that sold products were in good conditions and that possible damages resulted from installers' misbehaviour. In the light of these necessities, Mr Idolazzi started elaborating an instrument able to detect cracks

[67] www.eurotestweb.it/

[68] TÜV stands for Technical Inspection Association (*Technischer Überwachungsverein*) and represents a group of six German companies (originally connected each other, now independent), that work as independent consultants and examine factory plants, motor vehicles, energy installations, amusement rides, devices and products (e.g. consumer goods) which are subject to mandatory monitoring.

and other damages on PV cells. Electroluminescence (EL) measures were, thus, developed, but its application in the field was simultaneously discovered in various part of Europe, making impossible the submission of a patent application. During years, however, Mr Idolazzi differentiated his practice from the others through on-site application, methodology that assures him a competitive advantage even today. In fact, EL are usually conducted in laboratories through cumbersome instruments which require the displacement of modules from the PV power plant. Mr Idolazzi, instead, identified an easier and more handily development of measures thanks to the creation of portable DSLR cameras that still today are adopted by very few consultants. The invention came out from a collaboration with Mr Mark Peter Rossetto, an engineer that collaborated in the inspection of the PV power plant at Parco La Fenice (in the province of Padova, Italy). Even if in this case the innovation resulted from a study carried on jointly by two professionals, in other cases improvement of techniques and equipment were driven by buyers' needs. In fact, closeness to modules' producers allowed also the understanding and successive modification of the power supply system adopted during measures: in fact, common practise was of powering one module at a time, requiring huge amount of time. Mr Idolazzi, instead, collaborated with customers and started powering a whole string, measuring 150 modules a time. This practice is not very common still today, because of the huge risks that it comprises and the necessity of highly qualified personnel to perform it. In this respect, Synertechnik boosts a competitive advantage, as it is one of the few firms able to correctly perform it.

Thanks to his expertise, he has been highly required as speaking guest to numerous conferences and seminars during exhibitions in Italy, Germany, Spain, Abu Dhabi, Riyadh, San Paolo, but also in universities, trade associations and certification bodies. In addition, several training courses have seen him as teacher in USA, Germany, Finland, UK and France.

Synertechnik is now evolving, broadening the range of services offered and planning to overcome the one-business structure. In particular, it offers different kind of technical consultancy, which can be subdivided in five categories:

a. *PV Consultancy*

   Synertechnik offers a recognized multi-year international expertise as providers of consultancy in the PV field, supporting PV power plant owners, investors, modules producers and EPC firms[69] in their activities.

   - **PV power plant owners and investors** can require feasibility studies, pre-shipment inspections of modules and components since they still are in the manufacturing firm, design and development of the project, construction management, but also all the

[69] EPC stands for Engineer-Procure-Construct and identifies PV consultants which take care of the execution phase of projects, in particular they take care of installation and entry into service of PV power plant. More insights about their organizational structure and the range of services offered are provided in paragraph § 5.3.

diagnostic services already described in chapter 2. Clients can require Synertechnik as a supervisor of EPC operations, ensuring that the project is developed in the proper manner, or they can directly require the consulting firm to take care of the execution. While in the former case the firm has to work besides the EPC technicians, in the latter the firm has the complete control of the project execution and has to select installers who would physically establish the PV power plant.

- **Modules producers** are the principal typology of Synertechnik clients, as they are generally isolated from the rest of the value chain and can gain access to a broader perspective while hiring an external consultant. In fact, producers rarely receive feedbacks from final customers, as they usually sell their products directly to distributors and, thus, they have limited knowledge about the concrete problems that are faced on the site, while also not perfectly knowing how other small and medium sized firms operate in the market. The consultant brings considerable updating within the firm, offering information about the market evolution, the customers' needs and the most recent international requirements. The services that they usually require ranges from the assistance in the certification of modules, the performance of diagnostic tests through the whole production line, the establishment of an internal testing laboratory, consultancy in the selection and purchase of necessary equipment, advices on updated local and international normative requirements about testing procedures and certifications.
- **EPC firms** are the less common client of Synertechnik, as they may offer similar kind of services. However, there are cases in which they have to require an external consultant to obtain second/third party audit in case of quality litigation among projects. In that situation, consultant provide an independent and reliable opinion about damages on PV power plant and the responsible party of its performance. Another case is, then, when their clients require consultancy diagnostic tests during the implementation of the project and the EPC firm lack necessary equipment.

b. *Product Certification Consultancy*

An increasing number of countries is today requiring product certification before introducing them in the market, with the aim of offering higher quality to consumers. In this setting, manufacturing firms interested in exporting in foreign countries need to test and certify their products in accordance with the target market regulations. Synertechnik can facilitate the whole certification process offering these firms consultancy in the identification of standards to which comply with and driving them in the selection of suitable testing laboratories and correct certification bodies. Synertechnik offers these services in a broad range of categories,

from electricity, mechanic, electronic, to telecommunication, automotive, aerospace and military field.

c. *Testing Services*

Thanks to the globally recognized network of Synertechnik, consultants can offer firms support in the development of an extensive variety of tests according with quality management systems, directly conducting them or supervising the development within a partner laboratory. In the photovoltaic field, Synertechnik offers solar simulators tests, but also safety tests of various electrical components. In addition, it is specialized in the development of photobiological safety tests and boosts proven experience in flammability, environmental tests, shock vibration tests, mechanic, electromagnetic compatibility, mil-STD and chemical reaction tests on materials. Target clients are, thus, PV modules producers who need to test their products before starting the certification process, but also manufacturing firms that work in the above-mentioned fields and need to perform tests to prove compliance with local/international standards.

d. *Calibration services*

Synertechnik provides an instrument calibration service for a wide range of test and measurement equipment, across a variety of sectors where precision instruments and apparatus are used. Consultants can allow firms to develop internal calibration through the study of *ad hoc* calibration processes and the development of internal training programs, but they can also provide external calibration support, working as intermediaries with some of the world best recognized calibration laboratories.

e. *Accreditation Support*

Synertechnik consultancy is directed also toward testing and calibration laboratories, helping them in obtaining accreditation in accordance with ISO/IEC 17025, which represents the formal recognition of the laboratory ability to perform specific tests/instruments calibrations. Thanks to the CEO experience within testing and certification bodies, Synertechnik can truly help laboratories in correctly developing procedures and select the most suitable equipment for the setting up. In addition, consultants provide numerous trainings, ensuring that the accreditation will be straightforward.

5.1.2. Internationalization strategy

The range of services that are offered by the firm are extremely specialized and can target only a limited number of clients in a country. The Italian niche market for PV consultancy was, in fact, the primary reason that imposed Synertechnik an international approach since its early ages, but this

aspect has also resulted in the firm greatest competitive advantage, as it allowed the development of worldwide experience and competences that are greatly appreciated by clients. Synertechnik positive global reputation and the CEO network attract clients without the need of investing in advertisement and reducing to zero the efforts for new clients search. In fact, Mr Idolazzi stated that "*laboratories and firms mostly rely on word-of-mouth communication as the most reliable source of information when consultancy services have to be selected. Thus, thanks to my extensive personal experience among years and within that environment, I am sometimes contacted by foreign firms that get acquainted with Synertechnik services through laboratories and former clients' suggestions.*" More than that, he referred that international exhibitions offer an important opportunity for information exchange, as all the parts of the product value chain are present and interact with each other. Synertechnik CEO attends the majority of worldwide PV fairs in order to strengthen his relations with existing foreign contacts and introduce his business to new ones. The resulting network has sometimes led to the creation of spontaneous sub-agents, referring in particular to technical professionals who discovered Synertechnik services for their personal interests but, fascinated by its atypical corporate environment, proposed it to approach their country of origin. In doing this, these people offered themselves as direct contact in the new target country and provided every kind of support needed in order to smooth the internationalization process. In other cases, countries' governments themselves contacted the firm for asking its consultancy on the establishment of national laboratory, the implementation of national projects or the collaboration for the development of specific operations. Also in this case, the network represents the main driver of promotion, as it allows local professionals operating at governmental projects to know foreign consultants with proven experience on international base and suggest their employment to competent people who are in need of missing skills. An important example is represented by the Saudi Arabia government, which required Synertechnik consultancy for the assessment and project verification during the installation of the first PV power plant in Mecca (SA). Therefore, direct contact with local people have always reduced difficulties in entering new markets. In addition, the majority of clients are firms with a similar international orientation and are, thus, more comfortable in working with a worldwide service provider than with a local firm. This is a fundamental enabling factor for Synertechnik foreign operations, as client-supplier interactions are not affected by cultural differences and, in particular, the adoption of English as the language for operational activities rarely appears as a barrier to successful collaborations. The only case in which the firm faced difficulties during the internationalization process was in China, where the adoption of interprets appeared as a necessity due to the scarce confidence of local people with the English language. This seems to be the unique kind of difficulty faced by the firm abroad, as it never had to deal with legal and administrative problems until today.

Hallmark of Synertechnik is, then, its ability to adopt to clients' requests and necessity, unlike most of German PV consultancies[70] who offer standardized package of services and require huge lead time and additional costs for adaptation. In Synertechnik, instead, customization represents a fundamental part of service offering, in particular for what concerns delivery systems. In fact, while most of the services rely on international standards and cannot be developed in an arbitrary manner, the way of delivering services through worldwide well-integrated connections between organizations, laboratories, certification bodies and societies among the value chain, offers an additional value. The advantage is, again, the result of the CEO personal experiences developed among several countries, which allowed him to meet many professionals operating in this niche sector. In addition, it must be noted that a service provision able to target the whole vale chain implies the coexistence of knowledge and competences on distinct aspects, that are generally considered by other consultancy firms separately. Thus, Synertechnik consultants do not limit their operations to purchased tests/services, but offer their client also advices and inputs for potential improvements. In the light of this, once the client decides to follow the received suggestions, the firm network provide the client possibilities for an easy and adequate implementation of the necessary operations. This kind of flexibility and extended technical expertise of service provider appears to be highly appreciated by clients, who usually tend to maintain the collaboration in the course of time. In this respect, it is important to notice that Synertechnik after sales activities are limited, showing that satisfied clients arbitrarily choose to re-contact the company for further advices. Only in the case of diagnostic tests on PV modules and calibrations of various instruments the firm knows the indicative period basis on which tests should be performed and contacts its clients reminding them the importance of respecting scheduled deadlines[71]. Most of the contacted firms like this approach and they not only require the service suggested, but also thank the reference consultant for avoiding them the risk of incurring in financial penalties.

During the formal interview that I personally conducted, Mr Idolazzi highlighted: "*I believe that it is truly fundamental to establish positive and open client-consultant relations, as these are indispensable factors on the basis of long-lasting collaborations*". In particular, he gives absolute priority to communication as the only way for letting potential clients know the high quality of his company services and the uniqueness of their approach. In addition, he explained "*clients do not have to be*

[70] German PV consulting firms are considered worldwide most reliable companies as their country boosts high specialization in the field thanks to early adoption after PV technologies emergence; nonetheless, their services are characterized by extreme standardization and difficulty of adaptation to clients' requests.

[71] As already described in paragraph §3.2., diagnostic tests should be conducted a specific period basis (usually six months or a year), in order to monitor PV power plant performances and how its efficiency varies among time; however, it is importance to remember that their performance is not mandatory, but depends on PV power plant owner/investor's preference. In the case of calibrations, instead, measurement instruments' calibrations are tied to a clear schedule, according with local and international regulations. In this latter case, their non-execution leads to financial penalties.

attracted by low prices or special sales, but they must grasp the concrete advantages embedded in Synertechnik services against other firms". However, the establishment of collaborative working relations is not useful only for clients, but also from the service provider point of view, who may improve his service provision. According with Mr Idolazzi experiences, services have often been rearranged and improved thanks to the necessity of finding a solution to unmet clients' requests, but there were also occasions in which the consultant himself had to deal with complex procedures and, thus, developed a solution to internally smooth the issues encountered. An emblematic example is represented by the abovementioned modification of the way of powering PV strings during Electroluminescence measures, which resulted from the necessity of speeding up the time needed to perform the test. Despite solutions are always developed through internal study and evaluations, the contact with worldwide clients represents the turning point, as they offer always new opportunities for improvements.

Today Synertechnik is present worldwide, offering its services on a regular basis in the whole European and Middle-East areas, while randomly working in China and Canada. In the next few years, Mr Idolazzi aspires to extend Synertechnik activities toward India and strength its position in China establishing a more stable local network. In addition, he would like to start approaching other Asiatic countries like Malaysia, Singapore, Philippines and Bali, exploiting the knowledge acquired through collaborations in the two major Asiatic countries.

These target countries are expected to be reached through strategies different from those adopted until now, as the size of local markets are different from those currently faced and geographic and cultural distance may represent an obstacle for successful collaborations. In particular, Mr Idolazzi would like to greatly differ the approach toward India and China, because of the communication, and consequently, operating difficulties faced until now in dealing with Chinese clients. In this latter country, in fact, he is not willing to personally perform PV tests, but he would like to assist firms interested in internally develop these systems selling them necessary equipment and offering extensive trainings. In this way, he is expecting to help PV modules producers in strengthening their ability to internally monitor the effective conditions of their products, but also provide support for the development of local PV consultancy firms. This strategy is due to the negative previous experiences had by the entrepreneur, who said that "*coordination and collaboration is truly challenging when it comes to Chinese technicians. Internal studies have demonstrated that it is more profitable to directly sell them technologies and equipment instead than invest in the Chinese market and coordinate local operations. As only most standardized services, like diagnostic services, would be performed by local consultancy, Synertechnik would maintain its position as source of know-how. More than that, local technicians' willingness to pay is extremely higher than that of local firms, making equipment and know-how sales more remunerative than local presence*".

Completely different strategy is, instead, that thought for India, where the high potential of the market could justify the establishment of a local subsidiary. In fact, India has launched the National Solar Mission[72] in 2008, with the aim of establishing 100 GW of PV energy by 2022. This project is offering high business opportunities for all typologies of firms that operate in the PV value chain and it is trying to attract FDI from all over the world. Considering the huge potential of the market, Synertechnik is evaluating the possibility of hiring a team of operational technicians, who may be trained and skilled for developing on-site tests and more standardized operations. Anyway, just standardized and practical operations may be performed locally, as Synertechnik CEO would like to maintain most of client-supplier interactions in the headquarter, safeguarding his network and always having direct contact with clients, who may express their satisfaction or dissatisfaction on how operating staff has performed. Following this strategy, Indian subsidiary would not be empowered and non-standard services would be supplied by Mr Idolazzi himself or by a trusted and already collaborating consultant. The main reason that leads to this formulation is the willingness to protect the company knowledge, but also that of maintaining the maximum level of professionalism and recognized technical expertise, which may be endangered by unexperienced workers. In order to evaluated the feasibility of this strategy, the firm is relying on an Indian consultant with proven international experience in quality management system of PV manufacturing and product certification, whose name is Mr Prabhat Kumar Singh. Mr Kumar Singh offered me important information about how PV manufacturing firms operate and about the concrete potential of PV consultancy there. Gained insights will be presented in paragraph §5.2.3., after a general overview about the Indian country from a geographical, economical, socio-political point of view. Additional information are then provided on the cultural context, with the aim of better understanding Indian potential customers' preferences and habits that may affect Synertechnik internationalization strategy.

5.2. India – the target country

India represents the selected target market for the internationalization of photovoltaic consultancy. This section provides a country profile, highlighting the geographical profile, its economic and socio-political environment, the cultural context and the photovoltaic project, which influences consultancy demand. Description is developed in *unilateral* terms (Ghemawat, 2007), which means that country is treated as a "*structural object*" under analysis and no comparative measures between countries are developed (*Ibid*). This approach has here been selected in order to provide a deep and thought-

[72] For further information, see paragraph §5.2.3.

provoking analysis, able to offer objective information. These data, in fact, represent inputs for the interview template and will be reconsidered in *bilateral*[73] manner in the sixth chapter.

5.2.1. Geographical profile[74]

In the elaboration of a country profile, geographic information expressed in unilateral terms offer important insights about land borders, time zones, climates, access to ocean, topography and within-country distances to borders (Ghemawat, 2007). These data represent a basic starting point for the evaluation of a country for strategic purpose, as they allow to consider the physical and climatic environment in which a company may eventually operate. In addition, considering the specific sector under study, geographic information may offer general information about the demand-side, showing the potential for photovoltaic installation and, consequent, necessity of consultancy.

India is the 7th largest country in the world, characterized by an area of 3.3 million sq. km, occupying a great part of the south Asiatic subcontinent. It is endowed with vast solar energy potential, as most of the country get 300 days of sunshine per year[75]. Its territory extends from the snow-covered Himalayan heights to the tropical rain forests of the south. The peninsula is bounded from the rest of Asia by the Great Himalayas and shares borders with Afghanistan and Pakistan (to the north-west), China, Bhutan and Nepal (to the north), Myanmar and Bangladesh (to the east). The country also borders to the Indian Ocean, which means that sea routes could be exploited at business level[76]. Relations with neighbouring countries are generally quiet, except for Pakistan, which is the backdrop of armed conflicts for territorial control over the Kashmir region since several years[77].

India has a tropical monsoon climate, which can be divided into six climatic subtypes in accordance with Köppen climate classification[78]. In particular, it is possible to distinguish between desert (in the west), alpine tundra and glaciers (in the north), and humid tropical regions (in the southwest and islands). Nonetheless, India represents one of the countries with the highest level of solar irradiance

[73] Ghemawat (2007) describes the CAGE Framework as a tool for developing *bilateral measures of distance* based on the differences that exist between the home country and the selected foreign country. This tool will be adopted in chapter six in order to aggregate all the empirical findings and understand the impact that differences between countries (India and Italy) paly on the internationalization strategy of photovoltaic consultancy.
[74] Source: india.gov.in/india-glance/profile
[75] http://www.mnre.gov.in/solar-mission
[76] Information about presence and condition of transportation infrastructure will be provided in the Economic and Socio-Political environment" (§5.2.3.).
[77] Indo-Pakistani borders have been characterized by three important wars in 1947, 1965, and a limited war in 1999. The two countries maintained a fragile cease-fire period since 2003, but sporadic armed struggles started verifying leading to important increase in their frequency from the second half of 2016.
[78] It is the climate classification system most adopted at a worldwide basis. It was published for the first time in 1884 and it has been modified the last time in the middle 1960s.

in the world[79] boosting high potential for the installation of PV power plants. However, geographic and climatic conditions have strong implications for photovoltaic panels, as they tend to perform better in presence of low temperature, while they have reduced productivity if subjected to high temperatures. PV power plant owners should thus have realistic expectations about the degree of panels' efficiency on the basis of their location. More than that, PV consultancy services must be performed in specific environmental conditions, limiting performance tests on modules only to periods with solar irradiance around 600 W/m², while electroluminescence measures can be conducted only in absence of rains and humidity. These requirements extremely constraint the periods suitable for their performance, as desired solar irradiance can be found only in April and May, while EL cannot be developed for the whole monsoon period, which goes from June to September.

For what concerns Indian Standard Time, it is 5:30 ahead of Coordinated Universal Time (UTC), which means that the country has half-hour time zone. This information is one of the most considered for strategic purpose, as it determines the extent to which communications could be performed simultaneously through direct contact[80] or should be constrained to indirect forms (such as messages and e-mails) due to opposite working times.

5.2.2. Economic and Socio-Political environment

Every year the World Bank Group develops a ranking in which 190 countries are evaluated on the basis of ease of doing business in their marketplace. The 2017 report[81] has ranked India as 130 out of 190, showing that it is still characterized by enormous challenges despite governments' efforts to create a simpler and more attractive market. In particular, inequalities among states, FDI restrictions, skilled labour force shortage, level of infrastructures and the difficulty of protecting intellectual property rights represent high barriers to entrepreneurship.

- *Inequalities among states*

One of the first difficulties faced when approaching India is represented by its administrative division. It is a multiparty federal, parliamentary democracy, subdivided in 29 states and 7 union territories, which have different degrees of legislative, executive and administrative powers[82]. This structure creates great disparities between states, in particular from an economic point of view, as they are characterized by different product and labour market regulations. According with the OECD Economic

[79] http://www.meteonorm.com/
[80] In this case, "direct contact" refers to the possibility of exchanging information simultaneously, adopting communication channels like phone and Skype calls.
[81] World Bank, (2017*), Doing Business 2017: Equal Opportunity for All*, Washington, DC: World Bank.
[82] Government of India, Ministry of Law and Justice (2015), *The Constitution of India*, Part XI.

Survey (2017)[83] the income gap between richer and poorer states has been enlarged due to the rapid economic growth experienced by the country in the last few years. India boosts, in fact, an overall annual growth rate of 7.5%, which is celebrated as the fastest one between G20 countries. Though, activities' mix varies greatly between states and the role played by agriculture strongly impact the income generating level. In fact, in those states where agriculture still represents the larger employment sector, the level of poverty is higher. The main reason is a low productivity of the sector, as it accounts just the 18% of GDP even if it employs almost half of working people. In fact, farms are usually characterized by small dimensions (less than one hectare land plot) and low mechanisations, showing a missing guiding role of states, which should develop policies able to raise productivity and increase farmers' income. In addition, states should reallocate resources to those sectors that better contribute to income generation, while lowering barriers to entrepreneurship and reducing regulatory and administrative opacity (OECD, 2017).

The problem of inequalities is, then, strengthened when comparing living standards of cities and rural areas. India is inhabited by 1.3 billion people[84] and the 70% of the whole population still lives in extreme conditions, where the level of water provision, electricity and sanitation hit the lowest level of BRICS standards (*Ibid*). One of the most important attempts to reduce the divide has been represented by the establishment of community centres in rural areas, aimed at offering health care to the whole population. However, an overall expenditure of slightly more than 1% of GDP devolved to the cause (*Ibid*) is not enough and, thus, most of the centres (almost 80%) are now facing vacancy of trained medical staff and specialists (Lancet, 2015). In the light of this, parliament has recommended reforms to raise the number and quality of medical colleges to cover existing jobs, but prepared budget for the following fiscal year does not show significant increases in resources committed to health care sector (OECD, 2017).

Differences in terms of productivity and access to public services creates a large gap also in the level of consumption. In this regard, large welfare programmes have been developed, aimed at offering price-support for food, energy and fertilisers. In the last ten years these policies of inclusive growth has taken 140 million people out of poverty, but further changes are a necessary condition for effective redistribution and to strength states' ability to respond to local needs (*Ibid*). High expectations are posed on the implementation of a comprehensive tax reform, which would introduce first and foremost the landmark Goods and Services Tax (GST), starting from July 1, 2017[85].

The current Indian tax-to-GDP ratio is extremely low, where just the 5.6% of the population pays personal income tax due to the low level of income of most people and the large informal sector. In

[83] www.oecd.org/eco/surveys/economic-survey-india.htm
[84] Source: BBC Monitoring– India country profile (2017).
[85] http://finmin.nic.in

addition, the high rate of Corporate Income Tax (CIT) ranges from the 30% to 34.6% and it is subjected to huge variations depending on the enterprise size, ownership and sector. This system of concessions creates uncertainty on payer and results in numerous disputes, which lead India to be ranked as 172nd out of 190 countries on the ease of paying taxes (World Bank, 2017). In this respect, the introduction of a single tax on value added would facilitate the creation of a common and more uniform national market, encourage voluntary tax compliance and support investments. In addition, taxpayer services will be available online, reducing also the costs of tax collection. This new system should replace the various taxes on goods and services, reducing cascading effect through a seamless tax-credits throughout the value-chain. GST would be divided into four-rate classes, that differ among essential products, standard products, luxury goods and exempted items. This system would provide high turnover, that would be shared between the central government and the states (*Ibid*).

- *FDI Restrictions*

In May 2014, hard-line Hindu nationalist Narendra Modi was elected as prime minister representing a turning point for Indian economy. He promised to revitalise India's flagging economy and tackle corruption introducing a range of reforms that would allow long-term sustainable growth (BBC Monitoring, 2017).

One of the most important attempts has been represented by the "*Make in India*" initiative, which aimed at boosting manufacturing by enabling investments, strengthening intellectual proprietary protection, encouraging innovation and skills' development. This initiative poses ease of doing business at the centre and tries to create a more investor-friendly environment, whether domestic or foreign. Administrative requirements have been simplified, e-government procedures have been introduced and the removal of some old laws has allowed the reduction of uncertainty, delays and corruption (OECD, 2017). Particular attention has then been paid to the liberalisation of FDI, which has reduced the number of sectors requiring governmental approval, and led to substantial growth in terms of inflow.

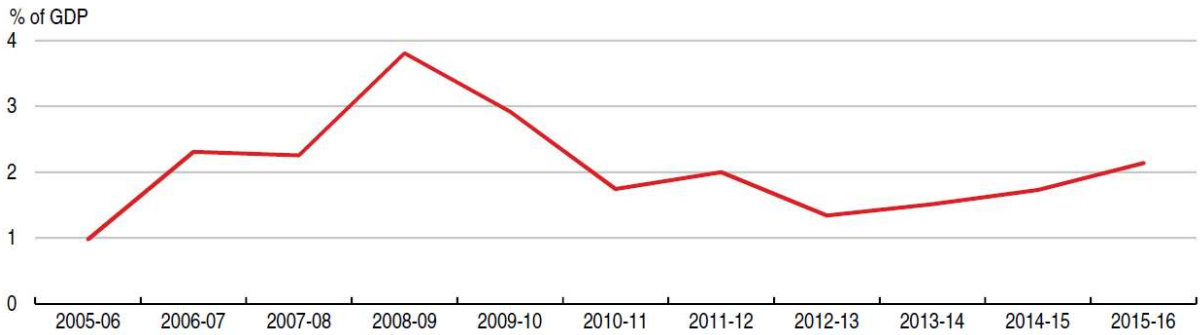

Fig. 7: FDI net inflows in India (Source: OECD, FDI main aggregate database).

As can be seen from figure 7, a remarkable increase has been experienced in the last few years, which has permitted the amount of FDI inflows' movement from USD 31 million in fiscal year (FY) 2013-2014, to USD 45 billion in FY 2015-2016. Nonetheless, Indian restrictions are still severe if compared with OECD and the other BRICS standards, in particular when evaluating the extent to which foreign equity limitations, screening or approval mechanisms, acceptance of foreignness personal and other form of restrictions are discriminatory (Reserve Bank of India).

Government commitment to "*attract and promote foreign direct investment in order to supplement domestic capital, technology and skills, for accelerated economic growth*"[86] is currently extremely strong. In fact, Department of Industrial Policy Promotion (DIPP), Ministry of Commerce and Industry, and Government of India collaborate to update FDI policy on an annual basis, through the publication of Press Notes. Last updating traces back to June, 2016 and provides the Consolidated FDI Policy in which eligible investors, instruments of investment and entry conditions are settled for every specific sector. Apart from those sectors for which FDI is not permitted[87], entry routes may be distinguished between Government and Automatic, depending on whether they require prior government approval or not. There are, then, some cases in which specific percentages of foreign equity are fixed as upper limits for the application through automatic route[88].

Specific guidelines are provided in the "*Make in India*" dedicated website[89], which presents entry options among the other information offered. These can be distinguished on the basis of the intent of a foreign investor of establishing an Indian company or only a foreign office for a non-domestic firm. In the former case, the foreign investor may opt for a wholly owned subsidiary[90] or a Joint Venture, as a Private Limited or a Public Limited Company. In the latter case, instead, the foreign investor can establish different kind of offices in the Indian territory according with its scope:

a. *Liaison Office* serves a limited scope of representation, offering a physical place where communications between headquarter and Indian entities can take place. In fact, it can be

[86] Government of India, Ministry of Commerce and Industry, Department of Industrial Policy Promotion, *Consolidated FDI Policy Circular of 2016*, June 07, 2016.

[87] According with Consolidated FDI Policy Circular of 2016 (2016), FDI is not permitted for "(a) Lottery business including Government/Private lottery, online lottery etc., (b) Gambling and Betting, (c) Chit funds, (d) Nidhi company, (e) Trading in Transferable Development Rights, (f) Real Estate Business or Construction of Farm Houses, (g) Manufacturing of cigars, cheroots, cigarillos and cigarettes, of tobacco or tobacco substitutes, (h) Activities/Sectors not open to private sector investment (Atomic energy, Railway operations)".

[88] Additional insights on those sectors that have limited FDI permission and related conditions are not here presented as their discussion is out of the scope of this dissertation.

[89] http://www.makeinindia.com

[90] Possibility available just for those sectors in which 100% FDI is permitted.

adopted for promoting the company, its activities and potential collaborations, but no operations can be performed there[91].

b. *Branch Office* is adopted when a particular range of activities is going to be performed locally. In this kind of office, activities similar to those performed in the domestic country can be carried on, but also promotion, representation and *ad hoc* developed services (like customer services) can be conducted.
c. *Project Office* is established to execute a contracted collaboration and cannot be adopted for promotional purposes[92].
d. *Site Office* represents a sub-office of the Project Office, as it is established only when a physical presence is needed near to the project area.
e. *Stand Alone Basis* refers to branch offices that are established in Special Economic Zones (SEZ)[93] and, thus, can operated only in that limited area.

Another important part of the "*Make in India*" initiative is represented by the establishment of an incentive system developed by Central and State Government departments. In particular, the development of manufacturing units is encouraged through direct tax incentives that can be linked to profit of new undertakings, be constrained to expenses connected with R&D activities or allow deduction of wages of new workman or of new assets' expenses. On the other hand, the foreign trade policy grants incentives also to export of goods and services, through the establishment of a duty exemption scheme, market access initiatives to promote activities to target countries and rewards for incremental growth in the export volume. However, it is important to notice that India is also implementing various pre-importation registration and product compliance regulations for products that are sold within the county, requiring firms to provide *ISI Certification mark*, also known as *Standard Mark*[94] on products. The mark is adopted to certify that a product conforms with Indian Standards (IS) with the aim of delivering higher quality, safety and reliability to customers. The standards are set by the Bureau of Indian Standards (BIS) and imposes on foreign manufacturers, interested in exporting in India, to obtain a BIS product certification license, which is granted just for those products that conform with relevant Indian Standards. Certification may be mandatory or voluntary, but the categories of products that require the former are continuously increasing, imposing

[91] Further information about admissible operations are provided by Reserve Bank, which has also the power to authorize the performance of not planned activities.
[92] "Make in India" website clearly clarifies that Project Office excludes those activities that are performed by Liaison Office.
[93] SEZs have been established through the Special Economic Zones Act of 2005 and represent geographical areas with attractive fiscal incentives, more developed infrastructure and a low degree of regulation. They have been created to attract FDI and increase economic growth.
[94] http://www.bis.org.in

on manufacturers to test their products in accredited laboratories[95] and, consequently, face additional costs connected with exportation. Today, India list cement, household electronic goods, food and related products, oil pressures stoves, automobile accessories, cylinder, valves, medical equipment, steel products, stainless steel products, electrical transformers, electrical motors as mandatory certifications[96].

Despite the abovementioned initiatives represent an advantage greater than in other years for FDI increase and encouragement, their applicability and functioning is still doubtful and needs further improvements in terms of restrictiveness before reaching the other emerging markets' standards level (OECD, 2017).

- *Skilled labour force shortage*

In India the 71.2% of the whole population is literate, a rate that is lower than in other emerging countries, although it boosts an education system that ensures compulsory and free access to primary education to almost all children (OECD, 2017). Sharp differences exist when comparing the literacy rate of cities with that of rural areas, as in the latter case almost the 50% of students attending last year of primary school is still not able to read basic sentences. In addition, attendance ratio in those areas tends to dramatically decrease during transition from primary to secondary school. In this situation, most of the population has only a basic education, which means that it has at most limited abilities in reading and writing, but it has not gained any form of advanced training, resulting, thus, in un-skilled labour force. Today, the 90% of the whole population is un-skilled or semi-skilled and has limited possibilities of employment. From a foreign investor point of view, it leads to inability to find suitable competences in the target country and, thus, to prefer other markets with better education systems. In response to this problem, the Indian Government has launched the *National Skill Development Mission*[97] in 2015, aimed at training minimum 300 million Indian youngsters by 2022. As explained by the Mission statement, India aims to "*align demands of the employers for a well-trained skilled workforce with aspirations of Indian citizens for sustainable livelihoods*"[98], but this pretentious attempt should be coupled with attention to trainings' quality. Recent studies show, in fact, that just

[95] Bureau of Indian Standards set up a Laboratory Recognition Scheme (LRS) in which are mentioned all those laboratory that can provide certification as accredited in compliance with ISO 17025 from Asia Pacific Laboratory Accreditation Co-Operation (APLAC) and International Laboratory Accreditation Co-Operation (ILAC).

[96] Particular attention should be paid to electronic products, as fifteen categories of them have been subjected to "Electronic and Information Technology Goods (Requirement for Compulsory Registration) Order" in 2012 by the Ministry of Electronics and Information Technology, to which were lately added another fifteen electronic categories in 2014 (http://crsbis.in/BIS/).

[97] Government of India, Ministry of Skill Development and Entrepreneurship, (2015), *National Skill Development Mission – A framework for Implementation*.

[98] Government of India, Ministry of Skill Development and Entrepreneurship, (2015), *National Skill Development Mission – A framework for Implementation,* p. 04.

few Indian institutions are globally ranked (ICEF Monitor, 2015) and almost the 80% of graduated students is considered unemployable because of the absence of necessary skills (Chikhalikar & Shinde, 2017). This problem affects in particular engineering universities, which are most Indians' preferred course of study, but which are inadequate to deal with foreign investors' labour demand. According with a recent research developed by Aspiring Minds[99], an employability solutions company, the 62% of engineering graduated students does not meet problem solving and analytical skills requirements (*Ibid*).

- *Public Infrastructures*

Like most of emerging countries, India presents institutional voids, in particular for what concerns rural areas' accessibility to electricity, sanitation and health care. Despite great investments are directed toward their fulfilment, most importance is attributed by the Government to transportation and communication structures, as they represent crucial infrastructure for FDI attraction.

Data shows that public investments have been dramatically raised in the last few years to the point that the *Project Monitoring Group* has been established, with the task of improving coordination across levels of government, ministries and departments (OECD, 2017).

Before posing the attention on critical investments' target, two noteworthy projects should be mentioned. The first one is the project of supplying electricity to the whole population by 2019, as today less than the 80% of Indians have access to it[100]. Electricity is a key condition for revamping corporate investments, in particular those of manufacturing, as they highly rely on it. But increasing capacity is not the only challenge, as one of the major problem of India relies in power outages, which have dramatic implications on economic activities and investments (OECD, 2017).

The second important project is represented by the "*Smart City Mission*"[101], which aims at developing more liveable and workable localities, characterized by well-developed transportation systems, open spaces able to enhance citizens' quality of life and cost-effective, citizen-friendly governance systems, based on online services[102].

For what concerns the transport infrastructure side, India boosts a road network of 4.86 million kilometres, that represents the second largest system in the world. However, they are not in great conditions and connectivity is poor. More than that, there is not an effective public transport system developed next to it, leading to huge adoption of private motorised vehicles and consequent long commuting times and very high air pollution. Also the highway system needs to be improved, but

[99] www.aspiringminds.com
[100] Data source: World Bank World Development Indicators database.
[101] http://smartcities.gov.in
[102] EY, (2016), *Doing Business in India 2015-2016*.

Government is already working on it promising an increase of 100,000 kilometres by the end of 2017[103]. In this sector, improvements have been speeded up in particular thanks to liberalization of 100% FDI through automatic route, which were previously strictly controlled by Government (EY, 2016). Finally, positive forecasts regard also port and aviation markets, which are addresses of huge investments to increase their efficiency and match trade demand. Their adoption has increased in the last few years because of the serious delays and costs connected with roads and railways' congestion. Nonetheless, their utilization is still beneath their effective capacity, due to insufficient infrastructure and the absence of favourable policies[104]. In particular, port infrastructures need to upgrade through the substitution of cargo-handling equipment and machinery, the establishment of more adequate road networks within the port area and the employment of personnel with more technical knowledge (Sharma, 2013). Additional source of administrative complexity is represented by the division of ports between Major and Minor: while the 12 Major ports are under the jurisdiction of the Government of India, the other 200 belonging to the latter category come under the jurisdiction of the respective State government. This subdivision leads to lack of coordination in port traffic management and non-uniform tariff systems[105]. Empirical observation denotes also huge delays in custom clearances, paper work and long turn-around times, all characteristics that discourage entrepreneurship and, in particular, international trades.

The last crucial aspect of infrastructure is represented by telecommunication, which is considered one of the key driving forces for the country's socio-economic development. It represents a fast-growing market for India, which has experienced an extraordinary growth from an Internet users' base of only 7 million people in 2001, to being today the second largest market in the world for Facebook access. More than that, it is expected to growth by additional 10.3% year-on-year, reaching USD 103.9 billion by 2020[106]. Through the "*Digital India*" initiative, Government aims to provide universal access to mobile connectivity and internet all over the country in order to lay the foundations for "*a digital empowered society and knowledge economy*" [107]. The creation of Smart Cities represents an integral part of this initiative, in which telecommunication infrastructures represent the backbones. In fact, they will require extensive investments for the establishment of tower setup, micro site and fiberized backhaul network, both for greenfield projects and for the redevelopment of existing cities[108], offering great business opportunities to firms responsible of their establishment.

[103] www.makeinindia.com
[104] AIVP, (2016), *Insights into the Indian Maritime Industry and Ports in India*.
[105] India Brand Equity Foundation, (2017), *Sectoral Report – Ports*, March 2017.
[106] www.ibef.org
[107] www.digitalindia.gov.in
[108] Deloitte, (2015), *Indian Tower Industry: The Future is Data*.

- *Protection of Intellectual Property Rights*

In today knowledge economy, intellectual property has a high commercial value and often represents the core competitive advantage of firm. In view of its importance, it needs to be protected ensuring the correct exploitation and enforceability by its inventor/creator at a worldwide basis. Protection is currently being increasingly harmonized around the world, requiring to all WTO members the ratification of the Agreement on Trade Related Intellectual Proprietary Rights (TRIPRS).

As India is a WTO member since 1995, it had to abide by the mutually negotiated norms and standards and develop an internal Intellectual Proprietary Right (IPR) regime aimed at streamline its administration. IPR provides legislative initiatives for the protection of patents, designs, trademarks, geographical indications, plant varieties and layout designs of integrated circuits[109]. However, India's efforts to reach global standards are not sufficient, leading it to be ranked 59 out of 128 on the global scale[110]. More than that, trade secrets and other form of confidential information have not been included in the legislative work, if not for the extent to which TRIPRS require it. In particular, Article 39 (Protection of Undisclosed Information) offers natural and legal persons "*the possibility of preventing information lawfully within their control from being disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practice so long as such information: (a) is secret [..], (b) has commercial value because it is secret, (c) has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret*"[111]. Indian Courts does not protect these information through specific laws, but refers to common law approach and provisions of the contract between parties, that are generally covered under the Contract Act, 1872. According with Indian Courts, restrictive clause can be placed on Technology Transfer Agreement, imposing on licensee to not use received information for purpose other than those agreed in the agreement. In case of non-compliance with these provisions, proceedings may arise. Same conclusion can be reached when an employee passes secret or confidential information to an unauthorized person[112].

Conditions that allows injured party to initiate an action for breach of confidence are the quality of confidence of information, the presence of an obligation of confidence and an unauthorized use of that information. If these conditions are fulfilled, civil or equitable remedies could be applied, leading to the obtainment of an injunction that could prevent the use of trade secrets information, require the

[109] www.archive.india.gov.in
[110] http://internationalpropertyrightsindex.org/country?c=INDIA
[111] WTO, (1994), Agreement on Trade Related Intellectual Proprietary Rights, Annex 1C, Part II, Section 7, Article 39, pp. 336.
[112] EBTC, (2015), *Report on how to address trade secrets provisions in India in absence of a trade secret law: A guide for the European SMEs*.

return of all such information and data and/or a compensation for the losses suffered[113]. However, there is not uniformity in the views of the Courts over these issues and it is, thus, necessary for firms to adopt appropriate polices, developing legal and technical methods that limit employees from disclosing or utilize trade secrets. Though, also Non-disclose and Non-compete agreements are not infallible, in particular considering the great turnover of personnel that characterize current years and the consequent scarce sense of loyalty offered to employer. In this situation, employers should create a working environment able to retain personnel and, thus, reduce risk of "inevitable disclosure" due to people tendency to seek new employment in business similar to that in which they used to work (EBTC, 2015). Necessary condition for gaining employees' loyalty is the ability of communicating and the sharing of common cultural ideologies, which allow the meeting of management and employees' expectations. Employers may decide to strength employees' loyalty through informal mechanisms, such as the establishment of packages of rewards and benefits, and/or the creation of a healthy working relationship based on mutual trust and communication. The extent to which these measures can influence trade secrets' protection varies according with cultural values (*Ibid*), which are discussed in detail in the next paragraph.

After having provided a general overview of some of the most critical aspects that still characterize India at an economic and socio-political point of view, it may appear clear that these factors must be considered before deciding whether to enter or not the market. Careful attention should be paid especially to the extent to which Government is willing to attract foreign investors and facilitate their local operations. Next section poses the attention on the sector under study, trying to explain the real potential that Indian market may offer to Italian consulting firms.

5.2.3. Photovoltaic development: The National Solar Mission

On June 30, 2008, the former Prime Minster of India, Dr. Manmohan Singh, launched India's National Action Plan on Climate to make the country's economic development energy-efficient[114]. The programme aimed at implementing eight National Missions, of which *Jawaharlal Nehru National Solar Mission*, often known as National Solar Mission, still represents the most challenging one. The mission was in fact launched on January 11, 2011 with the aim of developing 20,000 MW of grid-connected solar power by 2022. In order to ensure that each state was properly committed to reach the target, the National Tariff Policy, amended in January 2011, imposed on state members *Renewable Purchase*

[113] Fairfest Media Ltd. v/s. ITE Group Plc [2015(2) CHN (CAL) 704].
[114] Government of India, (2008), Prime Minister's Council on Climate Change, India's National Action Plan on Climate.

Obligation (RPO)[115], which obliges State Electricity Regulatory Commissions to purchase a determined percentage of power from renewable energy sources. The percentage required raged from 0.25% in 2012 up to 3% in 2022. In addition, in June 1, 2015, the current Minister Narendra Modi has increased the target from 20,000 MW to 100,000 MW (100GW) by 2022[116]. The achievement of set capacity was organized through the establishment of three phases, successively divided into batches, to which intermediate target were attributed:

1. *Phase one* ranged from 2010 to 2013 and was expected to lead to the establishment of 1.4 GW by the end of the period;
2. *Phase two* ranged from 2013 to 2017 and aims at reaching 11-15 GW of installed capacity;
3. *Phase three* goes from 2017 to 2022 and should lead to the achievement of the set target of 100 GW.

In addition, the above-mentioned capacity should be allocated between:

- *40 GW of Grid-Connected Rooftop Solar PV*, targeting every kind of roof space available in the country (institutional, commercial & industrial, housing sector);
- *60 GW of Medium & Large Scale Grid Connected Solar Power,* which should be developed through the establishment of Solar Parks.

Today cumulative capacity has reached 12,288.83 MW on March 31, 2017 and has been accompanied by the development of various programmes aimed at increasing population awareness about the importance of Renewable Energies (the so-called *Information & Public Awareness Programme*) and at improving skills of people involved in the sector. In particular, the latter is called *Human Resources Programme*, and aims at keeping constantly updating those that work in renewable energy sector and offers training and study tours, from one to two years, to students and researchers. This HR development programme should allow the fulfilment of short term needs of manpower and long term need of expertise, in particular in R&D[117]. However, a report co-authored by the Natural Resources Defence Council (NRDC) and the Council on Energy Environment and Water (CEEW) (2016) shows a huge gap of skills in India's clean energy sector. In particular, programs provided until today by Government are poor and do not meet industry's needs, imposing on EPC and manufacturing companies to develop in-house training programs also for low-skills jobs. The number of jobs that PV sector is offering is surprising, in fact data show that 79,000 full time jobs have been created from 2010

[115] http://mnre.gov.in/information/solar-rpo/
[116] Government of India, Ministry of New and Renewable Energies, No. 30/80/2014-15/NSM, July 1, 2015.
[117] http://www.mnre.gov.in/solar-mission/jnnsm/introduction-2/

to 2015 (November), but personnel preparation remains extremely low. Additional 1 million jobs are expected to be created in order to meet the 100 GW target by 2022.

In particular, while looking at figure 8, it is possible to notice that both skilled and unskilled personnel is needed. The greater part of personnel will be in the construction and commissioning, areas in which high preparation is not required, but minimum skills are needed in order to prevent that wrong handling during installation and other bad practices lead to PV power plant damages and efficiency losses. Most challenging is, then, the identification of highly skilled people with technical knowledge of Operation & Maintenance, able to conduct annual and ongoing performance data monitoring. NRDC and CEEW consider that these professional figures have key skills, which are currently needed in India for developing more data and statistics about project development, deployment and performance, as these are fundamental inputs to increase banks' confidence in solar investments. A crucial problem in India is, in fact, the absence of truly reliable data, developed by highly skilled personnel which can lead skeptical financers to invest on a broader scale in the solar industry (NRDC & CEEW, 2016). Today, people with adequate competences in renewable energies represent just the 2-3% of the whole country's workforce employed in the sector, which is definitely lower than in other states like China, Germany and South Korea, in which skilled personnel represent respectively the 47%, 74%, 96% (Kaushic & Singh Verma, 2015).

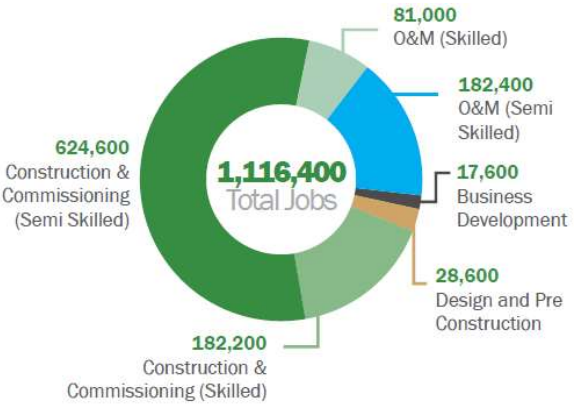

Fig. 8: Jobs required to meet India's Solar Target by 2022 (Source: MNRE & CEEW, 2016)

Skill gap influences also manufacturing, where people able to work in the research and development are strongly needed in order to increase domestic products' status of technology. Indian PV modules are, in fact, characterized by technologies inferior than those of other countries, while also boosting prices 10% higher than usual, due to the necessity of importing core materials. The disadvantage of domestic products would lead power project developers to adopt international modules, but the Government imposed the local origin of products as a *condition sine qua non* for the guaranteed purchase price of electricity for a 25-year term[118]. This request aimed to increase internal supply side and allow manufacturers to develop competences without being challenged by international competition. However, it not only did not allow domestic companies to become competitive, but also

[118] Starting from Phase I, Indian Government offered long-term purchase agreement to power project developers of solar parks, but a mandatory Domestic Content Requirement (DCR) was imposed under the Guidelines for Selection of New Grid Connected Solar Power Projects (2012). More in detail, during the first phase the DCR required that modules and cells were bought from Indian producers, request that was successively extended also to thin film technologies, for the obtainment of guaranteed purchase.

resulted in increased prices for final customers[119]. In addition, DCR has also been accused of discrimination against foreign suppliers by United States, which filed a WTO complaint in 2013. After years of disputes, the WTO declared that DCR was inconsistent with TRIMS Agreement, as it makes purchase of domestic products a requirement to obtain advantages. In this respect, the clause was declared illegal in 2015 and India had to remove it (Chakrabarti, Sital & Khan, 2016). This conclusion allowed power project developers to adopt more efficient products, but great part of modules adopted since today have been manufactured by domestic companies.

In the light of this, it seems evident that Indian market can offer great revenues' generating opportunities for foreign PV consultancy firms, as the country strongly needs support for rapid technological development in manufacturing, assistance in operation and maintenance of established PV power plants and the creation of numerous training centres. Anyway, particular attention must be paid to understand how successful collaborations can be established locally and which are potential clients' preferences. In fact, in a sector characterized by personal interactions, cultural differences must be carefully evaluated, in order to correctly understand how to approach the foreign market.

5.2.4. Cultural context

India is an amalgamation of different cultures, characterized by a complex setting in which people are divided on the basis of their linguistic, religious and tradition orientation. The great amount of social and cultural differences that coexist provides it the award as the most differentiated country in the world. Clear explanation of its complexity is offered by the presence of twenty official languages in addition to the most recognized English and Hindi. Other hundred languages and dialects that are locally adopted should be added up, as they are often spoken by sizeable part of the country, but they have not already gained the "official" status. It is possible to note great differentiation also from the religion side: despite most of inhabitants are Hindu (over 82% of the whole population), also Islam (12%), Christianity, Sikhism and Buddhism are well-established religions (BBC Monitoring, 2017).
In the 1950s-1960s, most of the states have been reorganized in order to reach a minimum homogenisation in terms of ethno-linguistic and ethno-religious groups, but each state still presents numerous minorities groups, showing that unilingual target is still far (Bhattacharyya, 2003). Important implication of the presence of heterogeneous groups is the coexistence of different bank holidays and festivals. These are often determined at a state level, in accordance with the prevalent religious and linguistic demographics, while only national holidays[120] are observed throughout the country. In light

[119] The electricity bought by Governments is sold to distribution companies who, in turn, sell it to final customers: these latter will burden all the costs.
[120] India recognizes only three national holidays: Republic Day (Jenuary, 26), Independence Day (August, 15), Gandhi Jayanthi (October, 2).

of this, foreign investors should carefully organize their business operations taking into account celebrated holidays on a state-by-state basis.

Another critical aspect of India is represented by the fragmentation of society on the basis of castes, which have been abolished in 1950 with Indian Government ban of discrimination, but they are still present in everyday life. Evidence is provided by the fact that in 2015 about the 90-95% of marriages are still organized within the broad caste group (The Economist, 2015). Their system permeates all Indians, independently from their religion and geographical position around the globe, creating a society based on a hierarchy of endogamous, birth-ascribed groups each of which is traditionally characterized by one distinctive occupation and has its own level of social status. Their effect has been reduced just in the major cities of the country, thanks to education and growing urbanisation.

In addition to this form of discrimination there is also the gender one, which is perceived by almost the 72% of Indian women. According with a recent research developed by TeamLease (2016), stereotypes that consider labour market as a male-dominated environment are still firmly rooted in the Indian society, without differences between areas. In fact, data show that women are unexpectedly not more employed in urban areas, but, on the contrary, the 30% of workforce is female in rural areas against the 20% of urban ones. The main reason must be found in women preferences for non-professional courses, as the others are often dominated by patriarchal taboos. More than that, there are also qualified women who decide to not work because of workplace stereotypes, that still discriminate women offering them lower wages, less possibilities of career progression and employment constrained to process-oriented roles or to stuff functions (TeamLease, 2016).

These are some of the cultural traits that better describe India's complexities, but they are not able to provide sufficient insights for the dissertation scope. For this reason, two sections are here developed aimed at identifying those aspects that most affect working relations and service adoption decisions, with particular reference to photovoltaic consultancy.

- *Working relations*

Companies that decide to enter a foreign country must recognize implications that cultural differences may have in managing human resources. In particular, culture defines "*the configuration of learned behaviour and results of behaviour whose component elements are shared and transmitted by the members of a particular society*"[121] (Linton, 1945, p.21). As already discussed, Indian culture is extremely complex and it cannot be described in a homogeneous manner, but some business issues can be investigated in broad terms starting from Hofstede's five dimensions. Through the analysis of

[121] Linton R., (1945), *The Cultural Background of Personality*, New York, Appleton-Century.

India's scores on Power Distance, Individualism/Collectivism, Uncertainty Avoidance, Masculinity/Femininity, Long-Terms/Short-Term dimensions, it is possible to draw general conclusions on how to organize working environment, relations and correctly motivate foreign employees (Noe et al., 2010).

a. *Power Distance* describes how a culture deals with inequalities and hierarchical power relationships (*Ibid*). As India is characterized by caste system, hierarchical structures are accepted within the society and are reflected in top-down organizations, in which power and decision making are centralized and managers are expected to strictly monitor subordinates' actions and enforce rules (Thakur, 2010). Superiors are, thus, truly respected and their directions are blindly followed, without risk of contradiction even in those cases in which decisions are not considered wise (Ibid). Evidence is provided by the fact that employees rarely call their superiors with first name and, even if they do it, attitude is really formal. In addition, employees are familiar with control and unequal privileges, and tend to fully accept the adoption of status symbol for enhancing one's power position (Hofstede, 2010).

   When employer and employees differ in the preferred organizational structure, risk of miscommunications and conflicts is extremely high (Noe et al., 2010). A study of working relations in the internationalization of science and engineering firms demonstrated that balance between authority and control is extremely important when approaching India. But, contrary to what happens in Western firms, providing autonomy to employees does not result in the creation of an entrepreneurial spirit. Thus, foreign firms that want to introduce a flatter organizational form should strength involvement and recruit personnel with a business mindset (Asakawa & Som, 2008).

b. *Individualism/Collectivism* explains the extent to which people act as individuals or as members of a group, defining self-image in terms of "I" or "We" (Hofstede, 2010). This shows if people focus only on their own interests or look after those of their families. India presents both individualism and collectivism traits, as actions are influenced by the group opinion and needs, but every person is also concerned with the way of conducting his own life, in the light of Hinduism cycle of death and rebirth (*Ibid*). From a working perspective, this means that employers should try to integrate and build relationships with employees, as this figures as the only way to align interests and create relations of mutual trust. In addition, Indian people base personal achievement on the group well-being, considering co-workers, extended family and community success part of their personal motives (Juhàsz, 2014). These aspects should be considered in particular for the definition of compensation package, as links with group

performance[122] could work better than those that rely only on individual success. More than that, selection activities should pay more attention to candidate ability to fit in the group, rather than to his personal soft skills (Noe et al., 2010).

c. *Uncertainty Avoidance* represents people tendency to accept unexpected events, unstructured situations and ideas. India appears quite comfortable with uncertain future and tolerant of ambiguity. People, thus, does not try to control outcomes and results (Thakur, 2010) and take each day as it comes (Noe et al., 2010). In the working environment, this is reflected by tendency to frequently change employer and weak loyalty, as they are not comfortable within settled routines (Hofstede, 2010). Indians try to "*adjust*" everything, indicating with this term all those actions that range from finding unique solutions to insurmountable problems to turning a blind eye. The most important aspect that must be remembered when doing business in India is, in fact, their tendency to constantly "*bypass the system*" and the perception that rules are set just to be circumvented (*Ibid*).

d. *Masculinity/Femininity* expresses which values are mostly strengthened within the society and how roles are divided. As already said, gender discrimination is extremely high in India, providing evidence of its tendency to score high on masculinity index. In addition, competition and status symbol seem to play a crucial role in Indian society, where ostentation represents the only way to demonstrate one own success (Hofstede, 2010). As material gains are highly valued by people, foreign employers should motivate employees providing incentives systems able to satisfy local desires, thus, balancing monetary and non-monetary incentives in a truly visible way. The same values could be exploited to strength employees' commitment through the development of punishment systems. A successful example is represented by Haier Chinese offices[123], where pics of managers are displayed throughout the company with a drawing of a green smiley face on those that meet target and a sad one on those that have poorly performed (Merchant & Van der Stede, 2007). This practice of naming and shaming strength competition and increase performance also thanks to the importance that people attribute to others' opinions.

e. *Long-term/Short-term* determines the cultural preference for attitudes toward present or future, focusing in particular on immediate or delayed rewards. India has not a determined

[122] Rewards and incentives systems are considered a form of cultural control, as they provide compensation on the basis of the overall company (or just of a part of the entity) performance. Group-based incentives creates a culture of "ownership" and "engagement" that motivates employees while also benefiting the organization (Rosen, Case, Staubus, 2005).

[123] An example that refers to China instead of India is here presented due to their close scores in Hofstede's evaluations of countries. In fact, while India scores 56, China presents a masculinity index of 50. Business practices developed on the basis of this dimension could, thus, similarly work for both markets.

preference, as the concept of karma drives individual's life, showing a non-linear conception of time (Hofstede, 2010). Long-term orientation denotes perseverance and thrift characteristics, in fact Indians often tend to work hard in the present for offering a better education to their children (Juhàsz, 2014), but, at the same time, they show traits of short-term orientation in their preference for maintaining time-honoured traditions (Hofstede, 2010). According with Heidrich (2006), Indians consider time as a framework for understanding whether they need to steadily work or not, in fact, a part in those cases in which deadlines are explicitly defined as critical, people consider deadlines as flexible. This means that foreign employers should be ready to correctly interpret delays in meetings and assignments' delivery as acceptable and not as a lack of respect (Walker, 2010).

All these cultural characteristics offer important information for foreign firms interested in approaching India not only through an FDI strategy, but also thought whichever entry-mode, as any form of presence would require a basic understanding of which values dominate working environments.

- *Customer behaviour*

Despite various theories[124] affirm that globalization has reduced differences among customers' preferences, culture still plays a crucial role in determining buying behaviour, in particular when considering that "*roles for buying goods are different from those for buying services*"[125]. In this dissertation, huge efforts are made to adopt a customer oriented approach, identifying how service adoption is biased by different cultural values and how these beliefs may affect buying decision and customer satisfaction. In this section, factors that influence consumer behaviour are here presented and evaluated, but their effective impact is going to be determined in the next paragraph, through interviews' presentation.

a. Decision maker

In a country characterized by high power distance, like India, decisions are always taken by a key decision maker and, thus, service providers should make great efforts to identify who he is and try to gain his trust. In addition, it is important to remember that PV consulting are B2B firms, thus real power is always centralized, even in those cases in which it may not appear (Hofstede, 2010).

b. Motivations to hire a consultant

[124] For further information see paragraph §2.5.1.

[125] Holschback E., Hofmann E., (2011), *Exploring quality management for business services from a buyer's perspective using multiple case study evidence*, International Journal of Operation and Production Management, Vol. 31 (6), pp. 648-685.

Every product and service demand is influenced by the importance that people attribute to it, which is strongly affected by cultural background (Usunier & Lee, 2013). Among the five above mentioned Hofstede dimensions, uncertainty avoidance and long/short term orientation must be considered when dealing with motivations for hiring PV consultants. This kind of service, in fact, presupposes people's desire to invest a considerable sum of money in the present to reduce damages in the future, which can be represented by low quality panels in case of PV producers, or by an inefficient PV power plant, in case of owners and investors.

Indians present a low score in uncertainty avoidance orientation and both traits of long and short term preference. These data lead to expect that consultancy adoption in India may be more driven by strategic purposes or real need to detect problems than as preventive measures.

c. *Purchasing decision*

After having identified the necessity of hiring a consulting company, the decision maker is going to evaluate various alternatives and select the one that would better meet his preferences. In this respect, it is important to understand which kind of company characteristics, service specifications and personal interactions Indians are looking for.

d. *Client satisfaction/dissatisfaction*

Clients' perception of service value and fairness varies greatly among countries in relation to the importance they attribute to different factors. According with Srinivasan interviews (2014) on technical consultancy approach in India, local people tend to pose higher importance in the outcome than in the methodology adopted, while also expressing biased evaluations on the basis of the perceived experience of consultant. This is also in line with Mr Kumar Singh words[126], who stated the Indians are more attracted by the expertise they can gain rather than from the service itself, showing that the way in which the service will be performed is of limited interest from their point of view. In addition, culture influences the way in which satisfaction or dissatisfaction are expressed. Collectivist countries, in particular Asiatic ones, usually do not voice complaints directly, but tend to engage in negative word-of-mouth (de Mooij, Maieke & Hofstede, 2011), mechanism that is extremely dangerous in PV consultancy environment, as service provider selection is often determined on the basis of network contacts.

[126] His complete interview is presented in the next paragraph, offering an overview of foreign PV consultancy in the Indian market.

5.3. Potential clients in the Indian market

After a general overview of some distinctive features of India at geographical, economic-political, social and cultural level, it is now necessary to focus the attention on which are the potential clients of Italian PV consultancy. Firms interested in expanding in the Indian market have, in fact, to deal with clients with different organizational structures and service preferences from those faced in Europe. Before selecting and interviewing some potential clients to understand their thoughts and real interest for PV consultants' services, a formal interview with an Indian consultant for service providers' internationalization has been developed. The person contacted was Mr Prabhat Kumar Singh, a professional with international proven experience in quality management systems and product testing and certification of PV modules, who is currently supporting Synertechnik expansion in India, working as commercial agent.

The first pertinent argument mentioned by Mr Kumar Singh to distinguish Indian market from European one was the different importance played by EPC (Engineering-Procurement-Construction) firms in the two markets. In particular, the number of EPC corporations established in India is constantly growing, thanks to government support for their development. This kind of firms may be structured in two different ways:

a. Independent firms, who perform a broad range of services that covers PV consultancy during feasibility studies, site design, modules and components selection services and execution of the project (referring in particular to installation phase and entry into service). These firms are generally of small dimensions and have limited operation and maintenance skills. They are usually contacted by investors when huge solar parks have to be developed, as they are supposed to be independent from manufacturing firms and, thus, able to select most efficient products.

a. *EPC who are part of manufacturing firm* represents the second category. These EPC are branches of the greatest Indian modules producers' firms and have been established with the aim of providing end-to-end support to clients. In India, this category is the fastest growing one and they generally perform all the above-mentioned services, a part from the selection of manufacturer supplier, as they are not independent form modules' producers.

The great importance that these firms play in India reduces the types of services that foreign PV consultancy can offer, in particular in reference to PV power plant owners and investors, who mostly rely on EPC for the whole project implementation. Anyway, according with Mr Kumar Singh's words,

on-site diagnostic services are not currently performed in India, as there is the credence that when modules are certified, they are certainly efficient. These tests can actually be performed in-house by modules producers, but they do not represent a sufficient measure for ensuring efficiency. In fact, as already explained in paragraph §3.2., wrong handling or bad practices during installation may provoke damages on PV modules, which were not present during the inspection conducted in production facilities. Thus, investors and PV power plant owners may still be targeted by foreign PV consultancy, as the existing firms lack adequate knowledge and instruments to correctly monitor PV power plant performances during and after installation. More than that, also EPC firms may be addressed as potential clients, as they currently lack know how and most advanced equipment for performing some tests. Therefore, they may benefit from collaborations with foreign consultancy, requiring them training programs, but also support in the development of unperformed tests.

The other important category of clients that may be addressed by foreign PV consultants is that of modules' producers, which have organizational structures greatly different from that faced in Europe. First of all, it is important to distinguish between their size, which determines the presence of internal testing laboratories and the number of certifications possessed. In fact, only bigger Indian firms have the potential for buying necessary instruments for conducting diagnostic tests in-house, while smaller ones[127] do not have resources for afford them. In the light of this, only huge firms may be able to certify their products according with a broad range of standards, while the smaller ones may lack knowledge on how successfully doing it. Thus, smaller firms may represent profitable targets for foreign PV consultants, as they may take advantage of consultants know how on certification process, while also exploiting the possibility of conducting diagnostic tests without the necessity of buying internal equipment[128].

According with the interviewed consultant, another important aspect that foreign PV consultants have to deal with is big modules producers' tendency to internalize all activities. In fact, local firms reduce to zero external collaborations and seek to hire external consultants after making use of their advices for more than two times. Small modules producers, however, may rely more on external figures, but only for the period of time necessary for gaining enough insights on the needed activities. Once they grasp the extent to which internal development of required services increases company's efficiency, they will try to insource the activity as a big firm would do. This behaviour works for every kind of service offered by PV consultants and highlights how services need to be adapted to potential clients'

[127] According with Mr Kumar Singh, in India modules producers are considered of small dimensions when their annual production is inferior to 25 – 20 MW.

[128] As explained in paragraph §3.2., diagnostic tests can be performed in-house through massive instruments or on-site through portable cameras. Huge manufacturing firms usually develop tests in-house as they can afford the purchase of equipment; small firms, instead, may hire external consultants able to perform the tests through their own instruments at a price significantly lower than that of the equipment needed.

preferences. In fact, while service provision needs to be reorganized according with existing professional figures, also the frequency of delivering may be subjected to modifications, shifting from long-term collaborations to one-spot provision.

A less discouraging information refers, instead, to Indian preferences from interactional point of view. The business environment is described as extremely open to foreign nationality consultancy, as long as clients recognize concrete competences in their counterpart. Mr Kumar Singh referred about a general preference for Spain and Germany in technical consultancy, as they are considered by Indians as worldwide leaders in technological development and they boost some of the largest manufacturing firms of power technologies. On the other hand, only China is usually negatively addressed, as its low and competitive prices are often perceived as representative of low quality. Anyway, also Italian consultants may face a positive approach, as there are Italian public figures[129] who are part of Indians everyday life and have created a positive predisposition toward working relations between Italy and India. Nonetheless, Mr Kumar Singh does not highlight the nationality of Synertechnik when he promotes its services in the Indian country, as he considers more important to transmit information about the uniqueness of the services offered and the expertise that is embedded within it. Indians, in fact, are more attracted by the possibility of learning than from the services themselves. More than that, he perceives that local people are more confident in the reliability of information exchanged when the promoter is an Indian person, as this shows that an Indian firm already believes in the Italian company competences and thus provide a high level of trust. Finally, it is important to express willingness to negotiate the price, as India believes in the importance of this practice.

In the light of the abovementioned characteristics of Indian firms operating among the PV value chain, it is extremely important to identify the extent to which a correct degree of adaptation to local requests may reduce potential barriers and increase the adoption and acceptance rate of specific services. After the general overview offered by Mr Kumar Singh, more insights are gained through interviews conducted with operating firms. More in detail, next paragraphs present four firms, highlighting their awareness about PV consulting services, the factors and motivations that may affect their purchase decision, their preferences in terms of client-supplier interactions and the factors that determine satisfaction and dissatisfaction[130]. The selected firms are: a recently established firm working in turnkey solar projects, *Sun Switch*, a module producer firm, *Himalayan Solar*, a manufacturing firm with an internal EPC division, *Waaree*, and the Indian leader of PV modules production, *Tata Power Solar*, which owns an internal EPC division and is the owner of various

[129] Emblematic example is represented by Sonia Gandhi, an Italian-born Indian politician, who has served as President of the Indian National Congress party since 1998.

[130] Interview templates adopted for conducting interviews can be found in the appendix.

extensive PV power plant spread among the country. All these firms boost different dimensions, typologies of services internalized, experiences among years and clients. For example, Sun Switch has been in operation for less than a year, while Tata Power Solar is approaching thirty years of expertise; in addition, Sun Switch works only in the implementation of projects, while Tata Power Solar has the largest production line in the country, it boosts an ultimate internal testing laboratory, it has EPC technicians spread all around the world and it owns one of the largest PV power plant in the country. From a production volume point of view, Tata Power Solar and Waaree may be compared, as they both reach huge volumes and they are pursuing 1000 MW production goal. Himalayan solar, instead, can be defined a medium manufacturing firm, as it produces on average 50 MW per annum. Given all these differences, these firms have been selected as representative of various categories of Indian PV firms and give the opportunity of evaluating how PV consultants' potential varies on the basis of local firms' characteristics. They all have never had any sort of contact with Italian PV consultants and, thus, their answers may be biased by stereotypes views. Anyway, respondents demonstrated to often associate Italian professionals with European ones.

Mostly of selected respondents have a decision-making role or are assistants to key decision-makers. As they all boost experiences among several firms, their answers may be not strictly related to the firm under study. To prevent the risk that answers do no correspond to specific firm characteristics, respondents were often reminded to answer taking into account the firm in which they were currently employed. However, in those cases in which respondents extended their answers to previous employing firms, questions about firm's dimensions were asked and answers were considered only when applicable also for the firm under study. In some cases, like that of Tata Power Solar, respondent provided general market information: these are reported and taken into account with clear explanation about their generic value and are not considered firm-specific.

Before presenting each firm in detail, figure 9 provide a general outline of gained information.

	SUN SWITCH	HIMALAYAN SOLAR	WAREE	TATA POWER SOLAR
Awareness about PV consultancy	Deep knowledge of all kind of services	Knowledge limited to certification services	Limited knowledge of diagnostic services	All services known
Motivations to hire consultants	Support in project development, help in the establishment of production lines	For module certification, for extending firm know-how	Introduction of diagnostic services in EPC division, help in entering new markets	Support for entering new foreign markets
Where to search	Network (suppliers), references, market reviews	Exhibitions (China & India)	Network (Business partners), References	Network (asking employees)
Consultancy firm characteristics	Consultants employed, firm size, previous clients, presence of local branches	Firm size, turnover, expertise	Proven experience (among years and countries), positive reputation, part of local network	Innovative services, Promoted by local people
Consultant personal characteristics	Knowledge, experience (at least 6/7 years), personal credentials	Not important	Ability to speak English, clarity, knowledge and experience	Truly prepared and skilled
Service characteristics	Price, delivery country	Possibility of learning, training programs	Price (quality is evaluated only in case of similar prices)	Price, training programs degree of know-how higher than local
Nationality preferences	Indians, but Europeans and Japanese technicians are respected	For equal services offered, Indians are preferred	No importance, the only requirement is a fluent English	Indians for similar services, Italian and German for services locally missing
Clients/supplier interactions	Importance of physical presence, long-term relations	Preference for physical presence, but Skype communication can be accepted	No importance of geographic distance because meetings can be planned. High collaboration is preferred	Importance of proximity and face to face interactions
Behaviours in case of satisfaction	Maintain working relation	Try to hire the consultant	Establish long-term relations	Try to hire the consultant
Behaviours in case of dissatisfaction	Depends on whether Indian or foreign PV consultancy	Not paying the whole fixed amount	Contract clauses determine measures in the event of non-compliance tasks	Paying only part (40/50%) of the fixed amount
Potential of Italian PV consultancy	Their service provision can be evaluated, but they need to have local personnel and competitive prices	Better if they collaborate with an Indian firm and have Indian technicians. Italians have a positive reputation	No ideas about reliability of Italian consultants, but their geographic distance is not a problem	Perceived as very professional, but they should be physically available in the country (better if through Indian technicians)

Fig. 9: Potential clients' preferences for PV consultancy

5.3.1. Sun Switch[131]

Sun Switch is a resent established company part of SAR Group, a 30-year entity that works in water, clean technologies, telecommunication, electrical and real estate businesses. Sun Switch was founded in December 2016 with a focus on the implementation of rooftop solar projects and megawatt grounded mounted projects. The firm currently performs various EPC services, like feasibility studies, procurement, installation and monitor of conformity with government policies, but they are going to establish their own production line until the end of 2017. Today, they serve only the Indian market, purchasing certified modules from selected suppliers, in which they highly trust as they do not possess equipment for performing diagnostic tests.

The small dimension and developing nature of Sun Switch makes it an interesting case study, as it may require a broad range of services by PV consultants in order to faster its development. Reliable insights are gained through a phone discussion with the firm General Manager, Mr Sumit Kumar Jha. With ten years of expertise in PV firms, he is now directing the firm establishment and growth, offering his considerations about PV services and their potential impact on the firm.

- *Awareness of PV consultancy*

Mr Kumar Jha has a deep knowledge about PV consultancy, which was demonstrated by the extensive array of services that he mentioned as important part of consultants' provisions. In particular, he said that PV consultants should address manufacturing firms offering support in the selection of production machines and raw materials, providing help in the testing procedures and process set-up, giving advices in certification of PV modules and in operation set-up in the firm early ages. EPC, instead, should be targeted for technical consultancy in project design, individual components development, quality assurance plan for big projects and support in components' selection. Finally, also on-site consultancy is considered extremely valuable, in particular when it regards monitoring and maintenance activities.

Sun Switch is not currently adopting no one of the abovementioned services, but the General Manager referred that he may be interested in considering project consultancy, especially for big megawatt projects, and he is willing to require support in the production line establishment in the next few months. Anyway, he will have to evaluate whether it is more profitable to hire an external person or employ someone who has great experience in the field. Their dimension and recent establishment, in fact, strongly affect financial resources, making the firm unable to adopt all the services it would like. For example, managers currently have to highly rely on the supplied modules' quality, as they do not

[131] As Sun Switch has recently been established, its website is under construction and the parent company website is considered as reference: http://sar-group.com/

have budget for buying diagnostic instruments, while external support is too expensive for small installation, like rooftop ones, that do not exceed 500 Kw. They only have a PV analyser for megawatt projects, which provide enough information about the performance of the established plants. As on-site tests are not possible, they try to mitigate their risks while sending few technicians to their suppliers' facilities and directly check quality through their equipment. These inspections are done on a sample basis and may be performed by more qualified independent consultants only when big projects are going to be implemented and their costs may be included in those of project development. A particular case is, then, that of government projects, where every part needs to be tested within independent testing laboratories selected and approved by the government itself. In that situation, both components' evaluation and suppliers' inspections can be made only by consultants or agencies that have been selected by MNRE and, thus, the firm has not the power for choosing its own consultancy.

- *Factors that influence purchase decision*

Mr Kumar Jha explained that his interest for consultants is strongly affected by price considerations, as external support is always costlier than an internal growth. SAR Group is big enough for deciding to hire trained people for every needed function and integrate lacking skills with suppliers' competences. Suppliers, in fact, may provide all the equipment necessary for the production line set up and offer support with the certification process, testing procedures and materials' selection. In the past, a Spanish supplier of production machines offered this kind of support, requiring itself a consultant able to provide an extensive package of services to the final client, in addition to equipment supply. This kind of approach may be preferred over consultants' adoption, as warranty is always offered by suppliers and, thus, long term collaboration is ensured. In Mr Kumar Jha experience, in fact, there have been cases in which the adoption of an independent consultant lead to numerous issues for his previous employing firm and his friends' firms. He reported having a German friend who went to India as a consultant and tried to sell his module production machine. As Mr Kumar Jha knew him in person, he suggested his equipment to many friends, who purchased that machine. Once the German consultant understood that his profit margins were too low, he decided to come back to his country of origin leaving all the clients without after sales assistance. This experience is now strongly affecting Mr Kumar Jha considerations about foreign consultancy, even if he is aware that foreign independent consultants may offer better and more useful services than local ones. Anyway, until he will not become aware of a truly reliable foreign consultancy firm, he would always prefer Indian ones. In the light of this, a fundamental requirement for being considered by Sun Switch is a strong presence among the country through branch offices and local contacts, plus a deep knowledge of the Indian PV market. Therefore, it is not the nationality that influences the interest demonstrated by the firm, but its local

commitment, as strong local presence guarantees the continuity of business relations even after service and/or equipment purchase.

From a company point of view, Mr Kumar Jha said he evaluates consultancy in a different manner whether they are Indian or foreigners. In the former case, he would probably know the firm and, maybe, also its consultants, thus he would know how they work and which kind of services they offer. More than that, if consultants are known in person, he would not pay attention to the firm characteristics, as he would know if its people are reliable or not. If the firm is foreign, instead, other aspects must be considered, searching information among firm size, firm background, local contacts, previous clients, who its consultants are and their personal credentials. It is fundamental to understand if they are offering their services only from their home country or if they have made huge investments in their Indian operations, as this increase chances of long-term relations. Another important aspect is understanding if the foreign consultancy is approved by the government, as this would increase their reliability. To gain this information, Mr Kumar Jha said he asks to his network of contacts, exploiting in particular its suppliers, but also more formal channels like market review and MNRE website.

- *Client – consultant interactions*

Indian consultants are, thus, generally favoured, but European and Japanese ones are extremely respected and admired from a technical point of view. This preference is not determined by cultural differences, but by the difficulty of establishing successful collaborations between people working at considerable physical distance. Mr Kumar Jha explained that most of Indians are not comfortable with phone calls and online support, but they prefer a person physically present with which interact at any given time. The General Manager explained he may accept a physical presence of consultants only for a contracted period of time, but it should include every meeting and review, while also ensure some sort of support in the future. Module manufacturers and installers have, in fact, to ensure project quality for 25 years when dealing with governmental projects, and require, thus, assistance for an equal or greater period. Advanced quality and greater professionalism offered by Italian consultants may be of great interest for Sun Switch, but a local branch office and the selection of Indian personnel represents a necessary condition for long-term relations. Guarantee of long-term support from foreign locations would not be accepted by Mr Kumar Jha, as his experiences demonstrated that communications become difficult and very costly.

Finally, consultants' personal characteristics are important from an interactional point of view: Deep knowledge of Indian sector and extensive experience must be demonstrated since the beginning of the collaboration. Mr Kumar Jha referred that he would personally check credentials of consultant assigned to his firm. He considers fundamental at least six or seven years of experience in the field and he would like to hear some clients' references in order to check his availability for follow-up programs.

- *Behaviours determined by satisfaction and dissatisfaction*

According with Mr Kumar Jha words, satisfaction cannot be defined after the service delivery, but needs to be evaluated over time, in particular through the firm availability after years. Sun Switch, thus, would never celebrate the consultancy qualities before long periods of collaborations.

Behaviours in case of dissatisfaction, instead, changes according with the firm nationality. If the consultancy is Indian, the firm can stop payments and require better collaboration, as common practice is that of solve litigations with informal methods, instead than resort to judges. More than that, Mr Kumar Jha explained that the consultancy would be blacklisted by his firm, but also from those of his friends and network: in fact, he would send a letter to all his personal contacts informing about its scarce reliability and professionalism. In addition, if the firm would be recognized by MNRE, he would contact the government itself communicating his dissatisfaction.

In case of a foreign firm, instead, payments can rarely be stopped, as business between countries would start legal cases, which implies huge costs and uncertain results. Foreigners know that Indian firms rarely would engage in this sort of troubles, thus they may intentionally decide to not offer the previously agreed support. In the light of this, Mr Kumar Jha explained that he would select a foreign firm without local reference and local branches only in the case in which he would be 101% sure about its reliability and a high client satisfaction rate.

5.3.2. Himalayan Solar[132]

Himalayan Solar is a medium-sized manufacturing firm, set in the north region of India, with an annual production volume of 50 MW. The modules produced are all certified, according with IEC and ISO requirements, and boost the CE and ERTL marks. Production is, thus, sold at a worldwide basis, from Switzerland, United Arab Emirates to India and New Zealand.

The person selected for the interview is Mr Deepack Kumar Choudary, the firm Operation Head, who plans and directs production with the aim of constantly improving efficiency and quality. He represents the person in charge of taking decisions about product certification and testing, while the establishment of an internal testing laboratory depends on the Director choice, because of the different kind of investment required for the set up. The speaker, thus, constrained the discussion on the two typologies of services on which he may have power of decision[133]. The interview was characterized by numerous interruptions because of its conduction during working time and while the

[132] http://himalayansolar.com/

[133] Himalayan Solar does not have the budget for the establishment of an internal testing lab, thus the related service offered by PV consultants was not discussed during the interview.

speaker was physically present in the production facility. Thus, the setting did not allow a relaxed conversation, but permitted the observation of the real working environment.

- *Awareness of PV consultancy*

Mr Kumar Choudary demonstrated a great knowledge about the services offered to reduce difficulties in the certification process, as he had previously hired a professional figure for this purpose in the past. He posed high importance in the help provided and in the guidelines and recommendations consultants gave him for reaching the IEC and ISO certification. In that situation, he had to deal with an Indian and a German consultant, showing his openness to collaborations with foreign counterparts. In telling his experience he also highlighted the indifference for consultants' nationality, which is overshadowed by the competences demonstrated.

Limited knowledge was, instead, possessed on the services related to diagnostic tests, as Himalayan Solar currently performs tests through direct collaborations with testing laboratories. The speaker explained that India has strongly increased the number of testing laboratories spread among the country in the last few years and their competences, experience, knowledge and facilities have improved. This allows manufacturing firms to efficiently and cheaply perform tests in the domestic market, without the necessity of requiring a consultant as intermediary between modules producers and international testing laboratories.

The speaker, thus, referred his potential interest only for consultants that provide guide during certification process, as he thinks that diagnostic tests may be directed and conducted directly through the already existing network of local testing laboratories.

- *Factors that influence purchase decision*

According with Mr Kumar Choudary words, if he may have to select a consultant he would search attending exhibitions, because they are frequented by other manufacturing firms and suppliers, offering possibilities for networking. In particular, he considers China and Indian exhibitions as reference point for purchasing decision and he is not willing to travel in other countries in order to extend his network. Also in terms of consultant nationality he does not express preference for foreigners, as he thinks that the level of expertise reached by local professionals is almost equal to that of international experts. In fact, if a foreign and a local firm offered identical services, the Indian consultancy would be preferred. Anyway, the main motivation for considering the adoption of a consultant is the desire of learning and extending the firm know how. Thus, if the needed knowledge was not domestically present, foreign consultancy firms may be considered as well, preferring in particular Italian and German technicians. These countries are considered by the respondent as bearer of technological development and innovation, thus, he would perceive professionals form these

markets as potentially highly skilled. Nationality, however, is not considered a factor able to influence the final decision, as the primary focus is on the quality of service offered, which should, then, be followed by firms' characteristics, like big size and a high turnover.

- *Client – consultant interactions*

Himalayan Solar adopts English as official language for all the internal operations, reducing potential difficulties of communication with foreign consultants. Personnel, then, is said to be open to every form of communication, accepting also the possibilities of negotiating and receiving advices without meeting in person. Even if physical presence would be preferred, the speaker referred that his primary concern is that of having a truly prepared and professional person to deal with. Thus, he does not care about the methods through which he has to interact with consultants and does not perceive cultural differences as barriers to successful collaborations, whenever technicians are truly qualified.
When proposing the possibility of having an Italian consultancy firm with Indians technicians that operate at a local level, Mr Choudary appeared enthusiastic, as this setting would allow the exploitation of international know how combined with proximity, which facilitates working relations.

- *Behaviours determined by satisfaction and dissatisfaction*

As already described by Mr Kumar Singh in the Indian PV sector overview, modules producers who are satisfied with professional consultants' advices would try to hire them in order to increase their internal knowledge. Mr Choudary confirmed this affirmation, stating that Himalayan Solar is not willing to often hire external figures, but prefers to develop them internally once they have gained know how from consultants. From this point of view, nationality plays a crucial role because Indians technicians may be contacted for an employment opportunity, while foreigners would not.
The primary reason of dissatisfaction, instead, is the scarce preparation of consultants, which may lead to the modules producer's decision of not paying the whole amount of money. In India, in fact, only a part of the determined price is paid in advance, while a huge percentage is delayed and constrained to the achievement of the set objectives.

5.3.3. Waaree Energies Ltd.[134]

Waaree Energies is a solar power solution company, founded by Waaree Group in 2007, which is composed by a production division and an EPC one. The firm has been ranked Indian best solar panel manufacturer in 2015 and is now pursuing an ambitious target of 1 GW production a year. In recent years, it has increased production from 250 MW in 2015 to 500 MW in 2016, which is sold especially

[134] http://www.waaree.com/

in India, Italy and Germany. All their modules are certified and they are internally tested on a daily basis.

The interviewed person was Mr Manish Bhatnagar, the firm General Manager Assistant, who boosts almost nine years of experience in photovoltaic projects. His interview was conducted by phone, because of connection problems faced by the Indian interlocutor. Nonetheless, the absence of visual contact did not prevent the development of a far-reaching discussion.

- *Awareness of PV Consultancy*

Mr Bhatnagar never had the possibility of dealing with international independent consultants, as Waaree has always required the direct help of certification bodies and equipment suppliers for reaching their objectives. In fact, during modules certification process, they directly contacted TÜV, as they wanted to get advices from a body recognized both from national and international customers, with the aim of increasing their product reliability. In the establishment of the internal testing laboratory, instead, they had the support of instruments suppliers, who sent them some consultants that helped in equipment installation, commissioning and provided training on how doing tests. Limited interest was, thus, shown from Mr Bhatnagar in these typologies of services offered by independent consultants.

Greater interest, instead, appeared when talking about the diagnostic services that PV consultants offer on-site. In fact, he reported not knowing them and expressed willingness to better understand them to the point of requiring contact details of Italian firms that offer this kind of consultancy. Therefore, Waaree performs a great number of diagnostic tests in-house and checks every module's quality through electroluminescence measures, but it does not have equipment and know-how for developing it on-site and, thus, it is not able to check that quality is ensured also after installation. This kind of service may be of crucial importance for Waaree EPC division, as it may allow it to ensure higher quality and reliability to its customers.

Last aspect investigated in terms of awareness of PV services was aimed at understanding if EPC divisions were never asked to deal with independent consultants from final customers and/or investors[135]. Mr Bhatnagar was surprised by this question, as clients believe in EPC firms and, thus, does not express the desire of independent professionals. More than that, their adoption would significantly increase the costs of PV power plant set up, without a concrete benefit, thus, he does not see market opportunities for these services.

[135] Because of difficulty of interviewing investors and PV power plant owners, I decided to investigate their willingness to adopt independent consultants while asking EPC firms if they have never had to collaborate with these consultants during PV power plant set up. Their answers provide me information on the current adoption of independent technicians from owners/investors.

- *Factors that influence purchase decision*

The driving motivation for hiring an external PV consultant is that of becoming more competitive and deliver always better products. However, a crucial role is played by the cost of services adopted, as it will affect the price paid by final customers. Mr Bathnagar, in fact, explained that they may evaluate a foreign professional only if his price is close to that of locals. According with him, the PV market in India has very low profit margins for modules producers, which account at most at 10% of final price. As firms have to compete in particular against Chinese producers, who boosts extremely low prices, Indian firms cannot purchase expensive services and increase final prices. Thus, quality of services offered is considered only to a limited extent, as price works as watershed. For example, the firm can offer only limited training programs, targeting technicians through courses developed by Chinese agencies, while most of installers' formation is developed directly on-site. He explained that he would love to provide greater training programs, but the budget for this purpose is absent. Thus, if they may have to select a consultant, they would pay greater attention to service quality only in case of similar prices, otherwise, they would go for the cheaper one.

More than that, they consider of primary importance the proven experience of consulting firm among years and in different countries, and the positive reputation it may have. In fact, Waaree would evaluate consultancy on the basis of its business partners' experiences and the network of suppliers, vendors, competitors and customers established in India. Mr Bhatnagar explained that his firm takes proper account of its Chinese partners' advices, as they are renowned for their cost-effectiveness and can, thus, provide reliable suggestions. Foreign PV consultancy should, thus, be associated with large firms or highly qualified ones, as their nationality does not affect purchase decision, but their reputation does. The market is considered extremely small and it is characterized by high turnover, allowing technicians to work for various competitor firms among years. Mr Bhatnagar, for example, had worked for three competitor firms in the last years and has now the possibility of sharing important information about people met during previous experiences. In the light of this, being part of the local network is fundamental for consultancy firm, and competences may be better grasped when offered in partnership with an Indian firm. In fact, the speaker explained that his firm would never evaluate a consultancy that had never been previously hired by someone else, demonstrating that references are fundamental for working in the Indian PV market.

- *Client – consultant interactions*

When discussion turned to client – consultant interactions, the speaker explained he does not have nationality preferences, highlighting his firm openness to whoever boosts proven experience, without consideration of cultural differences and geographic distance. Mr Bhatnagar told that he had worked

two years in Germany and had travelled more than ten times among Europe. More than that, many of his colleagues go to China for meeting business partners and buying raw materials, while other frequently attend exhibitions at a worldwide level. All these peculiarities are presented for showing the international mindset established within the firm and its personnel ability to work with foreigners. More than that, foreign consultancy is perceived as an opportunity for gaining more knowledge about procedures and innovations, which may not be present among local consultancy.

The speaker was not able to express his impressions about Italian technicians, as he had never had the chance to work with them; anyway, he stressed once more his absolute openness to foreign collaborations. Even geographic distance is not a problem from his point of view, as proximity is fundamental only for operating teams, while consultants can plan meetings and be there when scheduled. The only requirement for successful collaborations is consultant ability to speak English and clearly provide advices to internal technicians, who can implement procedures and suggestions even without the physical presence of consultants.

- *Behaviours determined by satisfaction and dissatisfaction*

In Waaree satisfaction and dissatisfaction are not an arbitrary factor, as Mr Bhatnagar explained that they would hire consultants through contracts in which every task and relative time for its performance would be defined. In addition, non-disclosure clause and measures in case of consultant failure/not satisfactory result are fixed and signed by both parties, in order to guard against risk of dissatisfaction. Anyway, Mr Bhatnagar expresses his strong appreciation for advices on non-required improvements of production line. In fact, he believes that foreigners may offer unexpected or unrequired advices on how increasing efficiency and improve quality on the basis of their worldwide and long experience. These aspects would, however, be tested and checked internally before implementation, as Waaree boosts a great number of technicians who can verify that suggested advices would provide effective improvements to the firm and not only increased profit to the consultancy.

5.3.4. Tata Power Solar[136]

Tata Power Solar is the India largest integrated solar company, founded in 1989 as a joint venture between Tata Power and BP Solar, it is now a wholly owned subsidiary of Tata Group since 2012. With the headquarter in Bangalore, it is a fast-growing firm, counting 700 employees today, who provide every necessary skill and competence within the company. Its mission is, in fact, that of offering an end-to-end service to its clients, operating both as cells and modules manufacturer, and as EPC firm.

[136] http://www.tatapowersolar.com/

Both the two divisions have been awarded many times for their outperforming results, but the most recent success of the firm was the achievement of 1 GW of installed capacity in February 2017.

Tata Power Solar's modules are shipped worldwide, from India to Europe, USA, Canada and Australia and are certified meeting a broad range of domestic and international standards (IEC, ISO, CE, MCS, BRE). Anyway, in recent years, it is working mostly for the Indian Government, selling the 80% of its annual production to NTPC[137].

Additional prestige is gained by the firm as it owns one of the country's bigger PV power plant: a 17 MW PV power plant established in Mithapur (Gujarat) in 2012[138]. The site occupies 71 acres and provides electricity to 15 million houses every year. More than that, it has been established in a record time of nine months.

As the firm may be target of the whole range of services offered by PV consultants, the person selected for interview was one with a diversified experience within the firm and a great understanding of how the various activities are performed. The person that better met these purposes was the Assistant Manager Operation, Mr Ravi Kant, who takes care of operating maintenance and quality of processes, but who was previously employed as Specialist Business Development, coordinating strategic partners and elaborating investment proposals to executive committee of Board and Board of Directors. Before starting the interview, Mr Kant made a premise by saying that Tata Solar Power is one-of-a-kind firm in the Indian market, because of its great size and its policy of internalize every kind of competence and skill needed. The firm position of power in the market allows it to gain every kind of expertise needed, attracting and retaining the best in class experts. As the speaker had 20 years of experience within the PV industry, he wanted to express his thoughts distinguishing between Tata preferences and those of smaller firms, offering more insights also on business realities that are not directly mentioned.

- *Awareness of PV Consultancy*

Mr Kant experience demonstrated in-depth knowledge of all the services offered by PV consultancy, but he expressed doubts about their adoption by large firms like Tata Power Solar.

The firm, in fact, has its own internal testing laboratory, but it did not need external support for the setting up, as people within the company had enough experience for handling both its establishment and accreditation. If they may need advices on improvements in the future, they would require TÜV support or, eventually, they would directly contact some of the testing laboratories part of the firm

[137] NTPC stands for National Thermal Power Corporation Limited, it is an Indian Public Sector Undertaking and represents the country largest power utility.

[138] http://www.tatapowersolar.com/Projects/Mithapur_Solar_Power_Plant

network. According with Mr Kant words, everybody can be hired by Tata Power Solar, as people are interested only in money and the firm has the potential for offering them what they are looking for.
The same reasoning works also for the performance of diagnostic tests among production line, which are generally performed in-house on a daily basis. However, some of the higher-level tests are performed though TÜV support, which is located very close to the production facility and, thus, can easily collaborate with manufacturing unit.
For what concerns the range of services related to on-site diagnostic tests, Mr Kant referred that the EPC personnel performs them on a sample basis, but they are not already able to perform electroluminescence measures, because of a lack of needed equipment. Anyway, Mr Kant explained that neither this service could be purchased from PV consultants by Tata, as the firm is planning to develop this instrument in-house. More than that, this equipment does not represent a necessity for EPC division, because of the proximity of installation sites to manufacturing units. In fact, PV panels are generally installed in site very close to the operating firm and, thus, when issues are noted by technicians, the whole group of modules is sent back to manufacturing unit where it would be analysed.
Last typology of service that may be proposed refers to support of investors and owners during PV power plant installation. Anyway, the firm has never considered to monitor its technicians' operations, as it boosts large teams of well-trained personnel with proven experience in the field. On the other hand, investors strongly believe in large firms' reliability and Mr Kant referred that they never experienced request of independent consultants. From the speaker point of view, this kind of service may be easily requested when modules are produced or projects are developed by small firms, whose name is not known to a great number of people.

- *Factors that influence purchase decision*

According with Mr Kant, the decision of hiring external professionals is taken by the highest levels of management, while in small firms only the owner has power of decision on the topic. If Tata may decide to search consultancy, management would ask directly to internal technicians, as the market is so small that people greatly know each other and can provide information about the most suitable person with the needed competences. There are, thus, deep interrelations among firms, which would favour Indian consultancy in case of similar services offered both at a local and international level. In fact, purchasing services from an external person is always perceived as more expensive than hiring a new technician, but this idea gets even worst when the consultant is foreign, as management know they would have to pay travel expenses in addition to the provided services. Mr Kant clarified that consultants are not classified and chosen on the basis of their nationality, but in terms of services' prices and their proximity to operating units. Foreigners would be selected only if needed knowledge

is missing within the network and someone suggest them. Positive references are said to be fundamental from Mr Kant point of view, who also highlighted the importance of a positive image portrayed by an Indian person.

According with Mr Kant, there are different motivations among small and large firms that lead to the adoption of foreign consultants: while the former would require foreign services at their initial stages with the aim of establishing an operating unit with the most advanced and technological instruments, the latter would require the external support only when reached a stable position within the market. In particular, Tata may adopt PV consultants only with the aim of gaining more insights on international markets in which it is not still present. In the light of this, the decision of going for a foreigner would increase expectations in terms of expertise, know-how and consequent support. Consultants have, thus, to be truly prepared when they decide to offer their support to large firms, otherwise their reputation may be damaged beyond repair.

- *Client – consultant interactions*

The particular idea that Tata Power Solar has about PV consultancy includes also client – consultant interactions. Mr Kant explained that collaborations should be constrained to short periods and be characterized by intensive exchange of information. Consultants' services may be required in a one-spot manner, with the aim of grasping all the necessary know-how as quickly as possible and internalize it. In fact, once enough knowledge is learnt by internal technicians, collaboration is immediately stopped. This could be possible only for large firms like Tata Power Solar, as only these are able to hire the most competent and highly skilled professionals, who boost capacities for understanding know-how and successfully integrating it in internal operations. Of course, this works differently for small firms, which may need consultants' advices for longer periods, as they may lack internal trained personnel able to understand and implement advices. Absorptive capacity is, thus, to some extent dependent on the manufacturing firm's size, which appears to be a proxy of its ability to attract and retain best technicians.

The intensity expected in collaborations cannot be reached without physical presence in the country: Mr Kant told that the possibility of having face-to-face interactions represents a fundamental requirement for ensuring successful collaboration, which cannot be reached when adopting Skype and other form of indirect communication, as they slow down the exchange of information. In the speaker opinion, consultants have to teach and train personnel, being physically available whenever needed.

This requirement does not hinder chances of foreign firms, as geographic distance can be overcome if the consultancy employs local technicians or send expatriates.

Mr Kant explained that cultural differences do not affect interactions, but consulting firm decision of hiring local personnel would be more than welcomed by Indian firms, as it would allow a faster and easier access to local network.

Even if culture is not considered as a key variable for selection, Tata would prefer Italian and German consulting firms, as previous experiences demonstrated them their professionalism and politeness. Mr Kant, in fact, told that the firm hired consultants from those countries in the past for the installation of new machines and instruments; satisfied with their work, they are now planning to contact them again for new tasks. Thus, repeated collaborations may be possible, but they are opportunities reserved for those few foreigners who possess know-how missing locally.

- *Behaviours determined by satisfaction and dissatisfaction*

Even if Mr Kant words suggested that long-term collaborations are not possible when dealing with large firms like Tata, the above-mentioned anecdote demonstrates that a satisfactory collaboration may lead to successive calls. Against this, Mr Kant wanted to highlight that if the collaboration involves Indian technicians, Tata will for sure try to hire the skilled person offering him a package of benefits and rewards impossible to refuse.

In case of dissatisfaction, instead, Tata is similar to the majority of small and medium Indian firms, who do not pay the whole amount of money since consultants have not achieved the required goals. In fact, Mr Kant explained that Tata usually delays the 50-60% of the fixed payment until satisfactory results. The percentage captive to result may be even higher when support in certification process are concerned, as they are extremely costly and represent an important investment for the firm.

Chapter 6 – Sector Analysis: The CAGE Framework

6.1. The CAGE Framework

The development of internationalization strategies requires firms deep and careful studies of countries' characteristics and foreign clients' preferences in terms of goods and services. In the past, the majority of analysis was conducted in a unilateral manner, highlighting target country's distinctive features like finance, technology, labour, management and institutions (Ghemawat, 2007). All these attributes and many others have been analysed in the previous chapter, focusing the attention on the environment in which a foreign PV consultancy firm interested in approaching the Indian market may have to enter. However, this approach is not sufficient from a strategy formulation point of view, as it lacks bilateral measures of distance (*Ibid*). According with the international strategy guru, Pankaj Ghemawat (2007), an analysis that considers differences existing between home country and foreign country better helps in identifying and evaluating which barriers must be overcome and which enablers could be exploited. The CAGE Framework serves this purpose analysing cultural, administrative, geographical and economic differences that characterize the country and/or the industry under study. In this dissertation, the analysis is conducted at an industry level, as the country attractiveness in general terms offers limited information for a niche market like that under study.

The sector analysis conducted through the CAGE framework allows a more visible and understandable screenshot of the key differences that managers have to deal with when crossing borders (*Ibid*). Each sector may attribute different importance to every dimension of distance, but they all should be taken fully into account at least at early stages of strategy development. From the PV consultancy point of view, economic distance represents the dimension to which pay higher attention, as it has strong implications both on the demand and supply sides. However, in some cases, economic differences are reflected also in the cultural dimension, as the sector is a B2B. Due to the fact that clients are firms and not individuals, organizational structures and management approaches are at the same time the result of specific cultural preferences and distinctive traits of the demand side. In addition, it must be noted that the presence of a collective decision maker rather than an individual one makes cultural dimensions considered highly different from those traditionally evaluated. Aspects like religion, values and norms may influence decision making only at a limited extent, while corporate-related factors should better be considered.

The scenario depicted through the framework describes all those challenges and difficulties that foreigners would face in comparison to local firms, helping strategists in identifying their liability of foreigners (*Ibid*). The CAGE framework, in fact, allows to study the psychic distance that exists between the countries under study and grasp to what extent differences may influence strategy development.

Considering Italy as the country of origin of PV consultancy, the Indian market is analysed from a cultural, administrative, geographic and economic perspective in the next sections. Before in deep describing each distinctive aspect, summary is provided in figure 10.

CULTURAL DISTANCE	ADMINISTRATIVE DISTANCE	GEOGRAPHIC DISTANCE	ECONOMIC DISTANCE
• Language • Needs and values • Service preferences: - Price - Know-how - Single collaboration • Bargaining habit • Lack of social connectivity	• Europe-India Trade Agreements • Italy-India Trade Agreements • Government push toward Indian firms	• Physical distance: - Italy-India - Time zones - Within country distances • Climatic differences	• Demand side: - Typologies of clients - Willingness to pay • Supply side: - Cost of labour - Unskilled labour force - Building costs

Fig. 10: CAGE Framework at PV Consultancy level

6.2. Cultural distance

Cultural distance is usually perceived higher in those sectors in which product or service consumption is connected with ethnic or religious ideologies, like in the case of food and TV products (Ghemawat, 2007). However, services characterized by high interactions may equally be affected by cultural biases. More than that, people with a different cultural background tend to evaluate product and services in a different manner, emphasizing aspects that are not even considered in other countries. These considerations make necessary an evaluation of industry differences among countries at micro-level, in order to understand the extent to which several aspects affect clients' decisions.

- *Language*

Language is the most evident and important element of culture, as it represents the primary mechanism for sharing and transmitting information (Usunier & Lee, 2013). As discussed in the previous chapter, India is characterized by a complex linguistic setting, in which each individual speaks various languages. However, according with the data gained through interviews, Indian firms usually adopt English as official language for every kind of formal communication, document and meeting, while dialects are preferred only for negotiating phases and informal discussions. In Italy, instead,

people generally know Italian and their local dialect, while English is spoken only by the 34% of the whole population[139].

As the sector is characterized by high interactions, and exchange of information represents the main purpose of service adoption, linguistic differences may represent an important problem. However, Synertechnik case showed that PV consultancy in Italy must have an international clients' portfolio to make profit, because of the small dimensions of Italian market. In the light of this, it seems logic that also Italian counterparts working in the sector have a deep knowledge of English language and are comfortable in adopting it for business purpose. Thus, language difference does not represent a barrier for Italian PV consultancy that are usual to operate in international environment.

- *Needs and values*

Culture shapes the importance that individuals attribute to different products and services, affecting consumer preferences and motivations that lead to purchase decision.

In the studied sector, European consultants' strength is often their independency from manufacturing firms, installers, certification bodies and testing laboratories, as the absence of profit-making interests – at least apparent – makes their advices and guidance more reliable from clients' point of view. In addition, the several typologies of clients addressed allow an integrated perspective, able to offer insights on the issues faced among the whole PV value chain. This aspect makes corporate clients more confident about consultants' advices, as proposed advancements may arise from in-depth knowledge of operational issues. Thus, firms that decide to adopt consultants highly believe in the importance of professionals' role and trust them, attributing their suggestions a value-adding function to firms' operations. As described in chapter 3, PV consultants are seen as *super partes* and able to satisfy clients' desire of protecting themselves from deception risks. The image portrayed and appreciated by Italian clients is, thus, that of a professional characterized by impartiality and confidentiality, which is often offset by that of suppliers, who are perceived as unscrupulous and focused on profit-making rather than on proving high quality to clients.

Against this, Indians strongly rely on their suppliers' integrity and do not deem necessary the adoption of an external person to supervise projects' implementation or modules' purchase. This aspect is connected with Indian cultural tendency to establish strong relationships, where mutual trust and esteem represent two indispensable enablers for a successful collaboration. Their culture is, in fact, often referred as group-oriented, and sense of belonging and respect have a key role in relationships building and have an impact both at individual and company level (Katz, 2008). Business collaborations

[139] The percentage refers to the population able to hold a conversation in English (Source: Eurobarometer 386, European Commission, 2012).

are, therefore, engaged only after the two counterparts truly know each other and believe in reciprocal reliability (*Ibid*). In this way, Indians do not feel the necessity of checking and supervising operations conducted in business relations and this has strong implications for the sector under study. Interviewed firms, in fact, reported high interest for foreign know-how, for equipment lacking in the local market and for support in targeting new countries, but no consideration was given to the "control" function of consultants. The fact that installers and EPC usually do not check quality on-site can be understandable if considering that they often are divisions or independent branches of the same parent company. What highly differs from the European scenario is, thus, modules producers' confidence in components suppliers and, above all, owners and investors' trust in large producers and certification. In the latter case, in fact, it is not clear if people lack knowledge about risks of damage connected with installation, if they place so much faith in installers' competences to believe they would never perform their tasks wrongly, or if trust is the reflection of cultural beliefs.

Anyway, presence of different values and considerations of suppliers' reliability means that consultants' services would have to satisfy different needs and target different clients. The approach adopted since now in Italy would not work in the Indian market, as foreign consultants could not propose themselves as saviours, but must tackle aspects of greater interest for the potential local clients.

- *Services preferences*

The different value that Indian firms attribute to consultants has strong implications also on the service characteristics that are in greater demand and more appreciated by potential clients.

In the studied sector, interviews highlighted that price concerns overcome the importance attributed to quality, leading clients to often not consider more professional services if their prices are not within average ranges. This is one of those aspects that are simultaneously part of cultural and economic dimensions, as the low margins of the Indian PV sector highly affect clients' preferences. However, the cultural aspect can be understood when thinking about the fact that also the Italian PV market is not characterized by huge profits, but the desire of verifying suppliers' reliability overtakes price concerns. In addition, when a consultant has to be selected, quality of the service provision represents a crucial variable, as advices only make sense if they come from a truly experienced and reliable firm, otherwise selected activities would represent a mere waste of money.

The different importance attributed to price and quality must be considered a key starting point for strategy formulation, as the strength of most Italian consulting firms may become insignificant if not accompanied by low price levels.

Another crucial concern should be based on the quite obsessive interest of Indians for know-how acquisition. In accordance with Mr Kumar Singh words, all the respondents were eager for information,

demonstrating that Indian firms do not want to purchase a service, but they want to have access to knowledge that is currently missing within their firms. In the light of this, it seems evident that Italian firms that want to succeed in the Indian market must possess intellectual capital and should strive to always develop new ideas and new competences, in order to create and maintain a position in the local market. Reports and results reached through collaborations appear, thus, to be of limited interest for Indian clients, while more importance is given to methodologies and ways of performing activities, as these latter can better be learnt and internalized from technicians. Evidence was offered by Waaree General Manager Assitant, Mr Bhatnagar, who was not aware of the existence of consultants able to perform diagnostic tests on-site, but who firstly asked about the possibility of buying needed equipment and only later considered collaborations through consultants. His approach demonstrated desire of understanding how to perform specific activities by his own, not interest toward establishment of collaborations in which external experts would perform desired activities and would provide information only about the outcome. Consultants generally take care of tests and studies and inform clients only about the results of their analysis, on the other hand, the discussion with the general manager highlighted their interest for the methodology adopted, not for the final considerations.

In Italy, instead, firms tend to outsource many activities and highly appreciate external collaborations, as these are opportunities for coming into contact with experts that boost large experience on the field. In addition, Italian firms know that competences shown by consultants could not be reached by internal staff, as personnel would not have possibilities of coping with a wide range of different situations and problems. Therefore, Indian firms pose into question PV consultants' traditional rule, as these foreign clients aspire to take advantage of PV experts know-how only for the time needed to grasp information that would be successively utilized and deepen in-house. Thus, collaborations between service providers and medium – large Indian firms are preferred to be short, but intensive, while only smaller manufacturing firms and independent EPC prefer long-term working relations. Again, this preference intertwines cultural and economic reasons, which is why it will be discussed in more detail in paragraph §6.5. Anyway, it is now important to point out that also on this aspect Italian and Indian clients differ, showing that working relations should be constrained to single and random collaborations, instead than long-lasting and reiterated among years and production division. In Italy, in fact, once the consultant gains trust of client-firm, his services are required on a large scale, especially on aspects that were not part of the initial deal. Clients appreciate the possibility of learning and improving their performance through an external collaboration, condition that is not positively viewed by Indian firms.

- *Bargaining habits*

Cultural differences do not affect only preferences in terms of service characteristics, but they also influence client-supplier interactions. As stated many times, PV consultancy sector is based on an international approach, because of its restricted field of application. This explains a general openness among worldwide clients to equally accept national and foreign consultants. However, India boosts negotiation processes characterized by bargaining practices, that may make foreign consulting firms feel lost or unable to correctly interpret processes. During one of the first interview conducted, Mr Prabhat Kumar Singh, Synertechnik's agent, referred about the importance of demonstrating willingness to bargain when proposing services to an Indian firm.

In the Indian tradition, both parties should demonstrate respect, friendliness and commitment to find and reach an agreement. Processes are often very long and require numerous meetings in which prices may move more than 40% between initial offers and final agreements. In addition, Indians may be prone to adopt deceptive technics, telling lies, sending fake non-verbal messages and pretending to be disinterested to part or the whole deal. In some cases, the importance of relationship may be exploited as an emotional technic to make the counterpart feels guilty about its proposal (Katz, 2008). In Italy, instead, bargaining is legally prohibited, but it is common business practice to negotiate some sort of discount over large projects or long-term service agreements. Thus, Italian consultants that may have to take part in negotiations with Indian firms should have to be prepared to cultural distance that affect these practices. In particular, Italian firms should be patient, able to control their emotions and accept that delays would probably verify. People extremely meticulous and accurate may be irritated by Indians tendency to pursue multiple actions and goals in parallel, but they should control themselves and adopt a positive attitude aimed at emphasizing relationship aspects instead than fixing deadlines or timing constraints to the achievement of agreements.

- *Lack of Social Embeddedness*

According with Hofstede dimensions, India has been ranked as both a collectivist and individualist country. This aspect has been mentioned in the previous chapter for its implications in working environment, but it is relevant also when evaluating the extent to which clients' purchase decision is affected by others' opinions and suggestions.

All the interviewed people considered extremely important that foreign consultants would be well integrated in the local network, through partnership or collaborations with important firms, the establishment of local branches, the employment of local technicians or, better, through the presence of strong relations with Indians able to recommend them. Respondents evaluated differently the

above-mentioned ways of being connected with the local network, but they all consider fundamental some sort of connectivity within the country.

Even if the PV consultancy sector is a niche market and it is, thus, characterized by the presence of high degree of inter-countries working relations, India tends to differentiate itself while restricting the importance attributed to positive references only to compatriots' words. As Mr Kant, Tata Assistant Manager Operations, explained, the Indian PV sector is so small and recently established that technicians tend to all know each other within the country. Therefore, firms' managers usually rely on their employees' personal contacts when searching competences internally missing in the firm, and they often exactly know who is the person they need. Also Sun Switch General Manager, Mr Kumar Jha, highlighted the importance of knowing consultants in person or entering into contact with them through Indian promoters, local references and recommendations.

This aspect represents Italian PV consultants' greatest obstacle, clearly showing the extent to which "*liability of outsidership*" may get the better of market potential. In fact, the other kinds of cultural distance may be overcome through the service provision adaptation to clients' needs and preferences, developing *ad hoc* entry-strategies. Lack of local contacts, instead, would prevent many consulting firms to successfully being considered and accepted by Indian counterparts. Decisions of hiring local personnel and making huge investments in the country may increase the chances of collaborations, but relations within the internationalizing consultancy should exceed commercial purposes and be extended to personal aspects. In fact, the strong ingroup orientation that characterizes India would prevent foreigners to take advantage of Indian workers' nationality as a pass for gaining potential clients' trust; foreign employers would have to truly be appreciated by their workers for their personal experience, knowledge and excellent skills in interpersonal relations before being positively introduced in the local network.

In the case of Synertechnik, liability of outsidership is present only to a limited extent, as the firm already has connections within the market. More than that, the mentioned promoter, Mr Prabhat Kumar Singh, is not only a commercial partner, but also Mr Idolazzi's friend. The two professionals have a relation of mutual trust and esteem, that has been developed through various collaborations in Saudi Arabia. As they knew each other working in a market different from that of respective origin, they had the chance of making a healthy connection detached from profit interests. Thus, Mr Kumar Singh is now supporting Synertechnik expansion in the Indian market as he strongly believes in the firm competences and skills and recommends it beyond his personal economic interests. Therefore, this situation shows that firms with a great global network can rely on it for smoothing barriers also in markets where social connectivity is fundamental.

6.3. Administrative distance

The PV sector is regulated at an international level by the International Electrotechnical Commission (*IEC*)[140], which cooperates with ISO (*International Organization for Standardization*) and ITU (*International Telecommunication Union*) to ensure that standards on electrical, electronic and related technologies fit together and complement each other at a worldwide level. As developed standards cover both requirements faced by module producers, EPC and PV consultants, industry-specific administrative differences affect the sector only to a limited extent.

However, administrative dimension must take a broader perspective, as any sector is influenced by between countries relations and existing trade agreements. More than that, FDI restrictions and governmental involvement in specific sectors may represent the tougher obstacles for firms' expansion.

- *Europe – India Trade Agreements*

India represents the European Union's 9th trading partner in 2016, with exports of engineering goods, gems, jewellery, that account for €37.8 billion, while trade in services reached €28.1 billion. The importance that India has for European countries can be seen also from the strong increase of investment stocks in the last few years, which has reached €51.2 billion in 2016 from the previous year achievement of €44.2 billion (EC, February 2017). These numbers are the result of long lasting diplomatic relations and dialogue between the two sides, which date back to the early 1960s. Among years, key bilateral agreements have been signed, including the Science & Technology Agreement (2001, renewed in 2007), the Joint Vision Statement for promoting Cooperation in the field of Information and Communication Technology (ICT) (2001) and the Custom Cooperating Agreement (2004). In the future, trade relations are expected to continuously increase, as more and more firms are willing to reach the sizable and dynamic market that India boosts. However, as discussed in the previous chapter, target country's trade regime and regulatory environment is still evaluated as one of the most hostile for doing business (EY, 2016). In order to reduce difficulties faced in trade relations, European Union and India are working on the development of a Bilateral Trade and Investment Agreement, which aims to ensure access to each other's markets for goods, services and public procurement contracts, establish rules about intellectual capital protection and competition, provide sustainable development, where growth in trade is balanced by environment, labour and social rights. Negotiations started in 2007 and sixteen rounds have been held, but a definitive agreement has not already been reached, because of continuous discussions based on EU requests for improved market

[140] www.iec.ch

access for some goods and services, government procurement, geographical indications, sound investment protection rules, and intellectual proprietary right protection (*Ibid*).

Nonetheless, India has developed several bilateral agreements with EU member states over years, and Italy represents one of those countries with longest-lasting political relationship.

- *Italy – India Trade Agreements*

Political and diplomatic relations between India and Italy dates back to 1947 and build on ancient trading interactions connected with the spice routes and Marco Polo's travels. Today, relations are even strengthening, thanks to fast growing interest demonstrated by Italian firms toward the Indian market. In fact, in 2015 exportation from Italy to India reached 3350.75 million (+10.20% respect to 2014) (Indian Embassy, 2016), while around 600 Italian companies can be counted in the country in 2016 (Chakraborty, 2017).

Until now Italy and India have signed seventeen bilateral treaties and agreements, which span from tourism cooperation (2000), renewable energies cooperation (2007) to Custom matters (2009) and many other applicational fields. Worth of the attention is the *Agreement for Promotion and Protection of Investments*[141], signed in November 1995 and into force since March 1998. The two contracting parties stated that investments of investors of the other contracting party should face a treatment equal to that received by local or third-country investors, without discriminatory or unjustified measures.

From an industry-specific perspective, the most important agreement is the Memorandum of Understanding on Indo-Italian Renewable Energy Cooperation (2007), which has been signed with the aim of developing new and renewable energies technologies. The stated objective was, in fact, to "*explore opportunities for exchange of scientists to share experience and for taking up joint research, design, development, demonstration and manufacture of new and renewable energy systems/devices by R&D institutions/organizations of both countries and thereby establishing institutional linkages between institutions of India and other countries*"[142]. The purpose was intended to be reached through the establishment of a "*Working Group*", which has to identify areas of mutual interest and cooperate activities. Nowadays, collaboration is encouraged and stimulated through an important business mission, which saw the participation of 60 companies, 6 Industrial and Trade Association, 4 Universities and Research Centres and 8 Banks to "*the Italy – India Business Forum",* that took place in New Delhi on April 27, 2017. The Italian Deputy Minister of Economic Development, Hon'ble Ivan Scalfarotto,

[141] http://finmin.nic.in/

[142] Ministry of New and Renewable Energy, Government of the Republic of India, The Ministry for Environment, Land and Sea of the Republic of Italy, (2007), *Memorandum of Understanding on Indo-Italian Renewable Energy Cooperation*, February 15, 2007.

personally led the delegation to encourage investments toward India, stating that the country is becoming increasingly friendlier toward foreign firms, thanks to its recently developed liberalizing policies and openness to international trade (Ministro Affari Esteri e della Cooperazione Internazionale & Ministro dello Sviluppo Economico, 2017). Renewable energies represented one of the most important sector represented by the delegation, as Indian Government strongly believes that partnership with foreign firms are needed by Indian corporations in order to speed up the process of industrialization of the country (*Ibid*).

Italy – India relations are, thus, extremely positive in these years: While Italy is proclaiming its firms the ideal partner to support the "*Make in India*" initiative and expects to reach bilateral trade of nearly € 8.5 billion in 2018, India is ensuring assistance and support to Italian firms willing to set up business in the country (India Today, 2017).

- *Government push toward Indian firms*

Government involvement in renewable energies' sector is extremely high, as it is the major buyer of the whole electricity generated through megawatt and ultra-mega solar projects. Its interest to protect local firms was demonstrated by the WTO litigation based on the domestic content requirement for solar cells and modules.

Anyway, FDI in renewable energies is permitted up to 100% under the automatic route, which means that Government approval is not needed. The same methodology applies also to the majority of service sectors, a part from banking, insurance, media and broadcasting. More than that, as demonstrated by the Italy – India Business Forum, India is opening frontiers and encouraging investments in the renewable energies field with the scope of introducing technological know-how and permit a faster industry's development. In fact, in order to meet the ambitious target of 100 GW of PV solar power, US $100 billion are needed, majority of which should be from foreign investors.

PV consultancies interested in approaching the Indian market are, thus, highly encouraged from an administrative point of view and they may also exploit the numerous initiatives developed by Italian Chambers of Commerce & Industry to facilitate the encounter between demand and supply.

6.4. Geographic distance

Geographic distance was the most considered variable in strategy formulation in the past, building on concepts like those of the *gravity model*[143]. However, the concept was traditionally constrained to the physical distance that exists between countries and its impact on the economic activity under study.

[143] The gravity model of international trade was first developed by Jan Timbergen in 1962 and aims to explain bilateral trade flows on the basis of economic sizes and distance between the two analysed countries.

The CAGE framework, instead, extends its meaning to differences in time zones, climates and within-country distances, as they all represent geographic aspects that can affect firm internationalization model.

For service industries, geographic distance has always been considered an important variable, as service consumption is usually characterized by significant local-presence requirement. Many researchers have reduced its important in the last few years, emphasizing the role of Internet as a tool for smoothing over distance problems (Cairncross, 1997; Friedman, 2005). However, data collected through interviews demonstrated that Indian firms still prefer physical presence against indirect form of communication, leading to the necessity of highly evaluating the importance that geographic dimension has on strategy formulation.

- *Physical distance*

The physical distance between Italy and India is generally calculated from Roma, Italian capital city, to New Delhi, Indian capital city, and it measures approximately 6,000 km. This long distance needs around 15 hours of journey time to be covered by flight, but it may reach also longer times when more than one stopover is needed, or when other departure or arrival cities are selected. In fact, it must be reminded that India is ranked seventh in the world for territory extension, which means that it requires long periods of time for moving within borders. In addition, not all Indian cities are equipped with airports and, if they exist, they are not all equally efficient or well-connected with cities. The area selected for operations is, thus, highly influenced by its connectivity and facility or not to easily and quickly reach it.

These data are of high importance for foreign PV consultancies, as the majority of Indian potential clients expressed their preference for firms physically present in the country. In fact, respondents referred that the adoption of internet-based form of communication is not appreciated at all, posing into question the possibility of developing some phases of consultancy and/or training programs remotely. Time zone differences would not have hampered this possibility, as the two countries only have +4.5 hours of difference, which are reduced to +3.5 from the end of March to the end of October, as Italy adopts summer time.

Taking into account clients' preferences, Italian consulting firm may decide to employ local technicians. However, this does not reduce or completely halt geographic differences, as Italian managers or experienced consultants should frequently have to reach site offices, in order to check local operations, provide training programs to employees and maintain control over subsidiaries. This practical necessity means that transportation costs and time would always represent an obstacle, in particular when considering the potential need of moving within the country to check various operation sites. In fact, every region has been targeted by the central Government with set renewable energies purchase

obligations, meaning that every region may offer high potential for consultancy. Therefore, foreign firms have to evaluate whether to focus on specific areas or offer their services through the whole country, spreading personnel around the national territory or moving them on the basis of project site. In case the latter option would be preferred, the firm will have to consider that India does not boost an efficient public transport system, plus roads' conditions do not encourage long journeys.

- *Climatic differences*

Climatic differences have important implications for the PV consultancy sector, as many of the services that have to be conducted outdoors require specific weather conditions. In particular, Electroluminescence measures lead to better results in absence of humidity and rain periods, as these lower sharpness level. Performance tests, instead, require solar irradiance to be 600 W/m², as measures have to compare effective power with rated output, which is calculated in standard conditions[144]. In Italy, these conditions are generally met from April to September (UNIRC, 2011), with obvious variation from year to year and throughout northern regions and southern ones, but these periods are usually those in which the majority of tests are performed.

In India, instead, solar irradiance is subject to greater variations among its territory, which makes different areas suitable for test performance in different periods. In particular, in January only the Southern Peninsula enjoys great irradiance, which extends to the majority of the country from February to May, leaving only Eastern (Assam, Arunachal Pradesh, Nagaland) and Western (Himachal Pradesh, Uttarakhand, Jammu Kashmir) Himalayas with lower levels of irradiance, especially in February. Then, June represents the onset of the summer monsoon, which influences weather conditions of all regions, except the northern ones, that are protected by Himalayas. Instead, in the last month of the year, only the Central Plateau and Western Dry zones present the needed conditions for PV performance tests[145].

These data influence working periods for technicians that operate outdoors, while those services that target manufacturing firms can be performed throughout the year. The latter, in fact, generally involve consultancy and, at most, diagnostic tests among the production line, which are not affected by climatic conditions. In the light of this, Italian PV consultancy may take into account climatic differences between the two countries at a strategic level, exploiting periods of limited activity in their home country for moving in India across those areas with most suitable weather conditions. More than that, travel expenses and time connected with local personnel rotation could be minimized while targeting each nation in its most suitable period.

[144] Standard Test Conditions (STC) for PV modules are: cell temperature of 25 °C on PV cells, Air Mass 1.5 (A.M 1.5) spectrum and solar irradiance on of 1000 W/m².
[145] Data obtained through www.meteonorm.com/.

6.5. Economic Distance

The economic environment that characterises India has been analysed in chapter 5, providing information about India economic size, driving sectors, per-capita income and the level of public infrastructures. As most of unilateral measures have already been discussed, this paragraph does not analyse general differences that affect Italy-India trade relations, but takes a micro-level perspective, posing the attention on demand-side and supply-side determinants that are highly sensitive to economic distance.

- *Demand-side*

Economic distance is the most important dimension in a B2B sector, as client firms' structure and internal organization affect market opportunities for PV consultancy. In particular, the different preference that Italians and Indians attribute to internalization of activities versus outsourcing, determines the different interest and willingness-to-pay for certain services. In addition to this, it must be remembered that some of firms' preferences may be the result of cultural influences, which lead to overlapping between economic and cultural dimensions[146].

a. *Module Producers*

   This category is the most served by PV consultants in Italy, as they need advices and guidance during module certification process, internal testing laboratory set-up and they often require diagnostic tests among the production line. As explained in the paragraph about cultural distance, they require services for their independent nature, without correlation with their firm dimensions. In most of the cases, services satisfy desire of having access to impartial experienced advices; in others, instead, they are required for a concrete necessity of gaining a second party opinion in quality litigations. In the light of this, it seems evident that the organizational structure of firms does not affect their interest or motivations to require consultants' help. In India, instead, the interest toward consultants' services changes on the basis of the manufacturer dimension, as firms tend to internalize the greatest possible number of activities according with their financial resources.

   Large modules producers are characterized by vertically integrated structures with numerous micro-departments extremely specialized, in which only few people operate. This kind of internal organization allows the presence of all the needed competences and skills, even when activities are highly specific and not in widespread use, like in the case of knowledge of

[146] PV power plant owners and investors' characteristics are not here presented, as their absent interest toward PV consultancy is totally dependent on their trust in module manufacturers and installers' competences, which have already been discussed in paragraph §6.2.

certification process and testing laboratories set-up. Aversion toward external collaborations was demonstrated by respondents from Tata Solar Power and Himalayan Solar, who explained that they would try to hire people with needed competences before requiring consultants' help. These professionals would be considered only if searched knowledge were not to be present among employable technicians. In addition, if they were to be contacted and they were to demonstrate themselves as extremely qualified, the module producer firm would try to hire them. These considerations lead to a different typology of service provider-client collaboration respect to Italy, as Indian large firms do not expect to require consultants' advices for more than once, but aim to contact them for the minimum time period needed for internal personnel to gain know-how. Their willingness-to-pay is, then, particularly low, as the costs of hiring external professionals are usually greater than those of employing a new person for a whole year[147].

This organizational practice of internalizing activities can be seen also in these firms' tendency to establish owned EPC branches. In Italy, EPC are almost always independent from modules manufacturers, as these activities require different kinds of specialization. In this way, when quality litigations arise, modules producers and installers have both the necessity of requiring an independent consultant's inspection to verify the extent to which their operations may be held responsible for damages or efficiency losses. In Indian large module producers, instead, the fact that production, project development and installation are performed by the same parent company reduces the necessity of monitoring modules' quality, as there are not selling-buying steps in which quality of products may be posed under question. In fact, if Indian people strongly believe in their suppliers' reliability, complete trust is given to collaborators within the same company. The chances that internal EPC divisions give rise to quality litigations or request second party inspections are almost non-existent, decreasing the range of activities that may be offered by PV consultants.

However, the internal organizational structure of small Indian PV module producers is different from that of large firms, leading to an opposite approach toward consultants. Small firms, in fact, do not have financial resources to internalize a broad range of activities, plus they have to pose higher attention to their modules' quality, as their procurement contracts are always threatened by large or foreign firms. As explained by Sun Switch General Manager, even if they may have general knowledge about peculiar aspects of monitoring systems and certification, they will need external support during production line establishment and early operations set-up. As all firms have to offer warranty for 25 years, they expect to maintain

[147] Information about local cost of labour will be discussed in detail in the supply-side section.

collaboration among years. Thus, emerging and recently established firms show an attitude toward consultants' services similar to that present in the Italian market, representing a typology of clients that should be targeted without huge necessity of adaptation. The only aspect they share with large firms is low willingness-to-pay, that is, however, determined by the scarce resources owned and not by balancing considerations on costs of employing a new person versus hiring an external one.

b. The second addressed category is, then, that of EPC. As already said, in Italy they are very often independent firms and require consultants' inspection services and diagnostic tests in case of quality litigation or necessity of verifying their operations' quality. In India EPC are sometimes branches of large firms, but there still are numerous cases in which they are detached from manufacturers, representing potential target clients similar to those served in Europe. In fact, even if they seem to not necessitate most typical consultants' services, there may be the possibility that efficiency losses verify in PV power plants among years, leading to litigations. The current low interest demonstrated by this category may, in fact, be the result of scarce experience, as first ever Indian commercial solar plant dates back to 2009 (Chhabra, 2009). Considering that not quite 10 years have passed since intensive installation have started, there still are huge possibilities that the market interest and need for independent consultants' services increase. Since waiting to check if these predictions verify, consultants can target EPC firms for procurement of mobile electroluminescence cameras, that have not already been developed by Indian firms, and training programs aimed to increase local know-how. In this case, willingness-to-pay would be determined on the basis of the procurement contract won by manufacturing firm.

After investigating the extent to which typologies of clients served in the Italian market differ from those that may be potentially targeted in India, it seems evident that PV consultants must tailor their internationalization strategy paying high attention to the different structure of the demand-side. Particular concerns should be given to widespread low willingness-to-pay, as this will have to be balanced with an *ad hoc* studied price structure.

- *Supply-side*

The economic determinants that affect the supply side are those factors that are intensively adopted in the industry under study. PV consultancy, as all service industries, highly rely on human labour, which costs account for 75% of people and people related expenses (phone, travel expenses, offices) (Stratton, 2012).

Cost of labour is extremely low in India compared to Italy, even when it refers to engineers, with degrees and proven experiences. According with the salary profile database "*Payscale*"[148], Indian engineers working in service industries receive on average an annual salary of 409,684 RS (≈ € 5,026.11) when working in Project Engineering[149]. This average is subjected to great variation according with experience among years and the city of employment. In fact, according with seniority, salary may shift from RS 178,339 (≈ €2,536.14) to RS 723.538 (≈ €10,289.37). Then, when experience and know-how are constrained to the electrical field, national salary data are even lower, starting from RS 156,524 (≈ €2,226.26) to RS 790,941 (≈ €11,254.94), with an annual average of RS 350,084 (≈ €4,981.63).

The same categories in the Italian market receive, on average, €30,248.00, when working in project engineering, and €27,967.00, when employed as electrical engineers. However, also in Italy data varies greatly according with geographic areas of employment and seniority, with a minimum annual salary of € 20,180.00 and a maximum one of € 50,236.00, for a Project engineer. Broader ranges are, instead, those that characterize electrical engineers, which may start they career with € 16,913.00 and reach € 54,856.00 after years.

The salary level difference that exists between the two countries may represent a great advantage for Italian PV consultancy willing to hire local personnel. However, despite low personnel costs, there would be the necessity of developing intensive training programs, as young recently graduated engineers, with scarce or absent experience, show to have extremely low technical preparation. As discussed in chapter 5, recent studies demonstrated that Indian engineering universities offer an inadequate preparation respect to foreign investors' labour demand, with almost the 62% of graduated students unable to meet problem solving and analytical skills requirements (Chikhalikar & Shinde, 2017). However, considering the commitment that government is showing toward renewable energies, and the number of programs and courses developed in the last few years to increase technicians' competences and skills[150], there are possibilities that more prepared and trained technicians would be available in the labour market.

The second variable that mostly affect service industry's cost structure is cost of building, which is characterized by an extreme volatile nature, as it greatly changes among regions. In India prices goes from 800€/m² in Calcutta, areas targeted by firms operating in the mining industry and mechanic one, to 7,600€/m² in Ahmedabad, area specialized in pharmaceutics, jewellery and automotive industry. Services and renewable energies experts are generally localized in metropolis, like Mumbai, Delhi and Bangalore, where building costs ranges from 2,000 €/m² to 7,500 €/m² (Indo-Italian Chamber of

[148] www.payscale.com – The cut-off date for data included in this section was May 6, 2017.

[149] Project Engineers' tasks refer to project management, coordinating and engineering design.

[150] Most relevant example is represented by Human Resource Development Programme, approved in 2013, that offered 400 fellowship/scholarship in renewable energies to encourage skills development and specialization in the field. (http://www.mnre.gov.in)

Commerce, 2014). In Italy, instead, costs are particularly low in the last few years, ranging from 1,055€/m² in Calabria, to 3,355 €/m² in Valle d'Aosta. On average, building costs ranges around €1,887 €/m², with spikes in northern regions[151].

Economic distance is, thus, the aspect that mostly affect the sector under study, as it encourages cross-border expansion through low labour costs, while simultaneously challenge the chances of success, because of differences in the firms' structure and, by extension, in the demand side.
While considering all the discussed aspects together, PV consultancies can now understand the extent to which their current internationalization strategy can work in the Indian market and how they can play with differences to gain a competitive advantage over local competitors.

[151] Source: www.immobiliare.it – Data refers to April, 2017.

Chapter 7 – Strategy Formulation

7.1. A Framework for KIBS Internationalization

The findings of the case study and the analysed related literature provide sufficient information to answer the research question through the development of a framework. As expressed in the introduction, this dissertation aims to understand how KIBS internalize in emerging markets.

Even if PV consultancy has been selected as the typology of KIBS under study, this chapter is now presenting a framework that extends conclusions to all those peculiar service providers that work in niche knowledge intensive business-to-business related industries.

The framework aims to describe and highlight differences that KBIS should address in their internationalization strategy when expanding in emerging markets rather than developed ones. The peculiar sector studied has emphasized the significance that business networks have in the internationalization process, leading to its selection as one of the two key variables able to influence strategy development. Business networks' importance for the broader category of KIBS has been highly investigated in the literature. In fact, according with Miles (2003), networks represent one of the most critical assets of all KIBS typologies, as the extent to which the firm is embedded in relationships with clients, suppliers and related firms similarly affect its rate of innovation, its promotion and its capacity of grasping and exploiting business opportunities, independently from the operating industry.

The other selected variable is represented by foreign clients' preferences in terms of organizational structure, as firms' tendency to internalize or outsource activities highly influences the potential of B2B specialized firms. Also this aspect is not new in KIBS literature, but it has always been presented through a descriptive approach, aimed to explain the reasons that lead firms to prefer KIBS adoption or not (Miles, 2003).

The following framework, instead, plots together the two above-mentioned variables with the aim to describe the different setting that KIBS face in emerging markets in comparison to developed ones, and contribute to literature development explaining how knowledge-intensive firms should approach different countries and/or market segments on the basis of clients' preferences. Following Patala (2008), the framework highlights that KIBS should not underestimate cultural and market differences that characterise each country, but they should adapt, at least to some extent, the service provisions and the local strategy to the foreign setting.

7.1.1. The Business Network

Based on empirical findings, PV consultancy sector appears as highly influenced by participation in business networks, which are described in literature as "*sets of connected exchange relationships*

between actors controlling business activities"[152] (Forsgren & Johanson, 1992, p.5). In the studied sector, actors that take part in networks are suppliers of components, modules producers, installers, PV plant owners and investors, but also other units, like certification bodies and testing laboratories, even if they may appear detached from PV consultants' activities. However, all the professional figures employed in these firms interact with each other, as their activities are directly or indirectly related and, thus, need to be adjusted to counterparts' needs. In addition, the limited size of national markets means that relationships are often developed between actors that belong to different countries.

The Synertechnik case study has shown that the network is perceived as global, extremely open and able to provide access to business opportunities at a worldwide level. The centre of the firm network is represented by the entrepreneur, whose role is that of expanding operations in foreign countries leveraging over his personal contacts. This view is in line with born globals' theories, which state that entrepreneurs' networks are based on previous experiences (McDougall & Oviatt, 1993) and allow firms to access advices and experiential learning, knowledge of foreign market business opportunities and gain trust and solidarity of foreign actors (Zhou et al., 2007). In addition, network is described by Bals and colleagues (2013) as a fundamental asset for overcoming liability of foreignness when firms expand abroad. These theories have been confirmed by Synertechnik current state of operations, in fact the firm has reached several countries without the need of highly investing in foreign markets and/or establishing local permanent facilities. Instead, the firm has always relied on word-of-mouth for its promotion and many of its operations abroad resulted from relationships of mutual trust and esteem with local professionals that operated as spontaneous agents.

If we focus only on the CEO words and the current state of Synertechnik operations, it would appear to readers that liability of outsidership does not affect the studied sector, as clients are said to present homogenous characteristics and needs on a worldwide basis and, thus PV consultancies seem to not need to adapt their service provision to foreign markets' requests. The described global network creates the impression that firms are automatically connected with potential clients from all over the world, without the need of integrating in a foreign setting. However, the studies conducted of the Indian market have introduced a different perspective.

Since now, the majority of Synertechnik operations have been conducted among developed countries or, at most, nations that have long experience with photovoltaic energies. In fact, many of the countries addressed have started implementation of photovoltaic systems in similar time periods, and with a rate of renewable energies adoption that was much slower than that characterizes emerging markets in recent years. For this reason, they faced the need to share know-how and improve

[152] Forsgren M., Johanson J., (cf. Cook & Emerson, 1984), 1992, *Managing Networks in International Business*, Philadelphia, Gordon & Breach, pp.5.

technologies cooperating a little at a time. In order to do it, an international network was created and it can be demonstrated when looking at the personal experiences of Mr Idolazzi, who travelled the world to spread and improve know-how among countries. Therefore, in early ages of PV power plants, the limited number of actors involved in technologies' development feel the need to establish relationships at an international level.

India, instead, is a country that has only recently started its commitment toward renewable energies and it is, thus, not already integrated in the international network on which all the above-mentioned actors have always relied. More than that, emerging markets traditionally boost closeness to external influences and demonstrate inward preference in relationships building. Interviews with potential Indian clients showed these traits, which were reflected in the importance attributed to PV consultants' presence and commitment toward local market, and their involvement and integration in the local network. Commitment does not just mean necessity of establishing local offices and facilities, but also concrete interest toward local relationships building. This aspect was pointed out also by Styles and colleagues (2005), who said that key success factors for KIBS interested in establishing operations in emerging markets are high dedication to interactions, adoption of a positive learning orientation and inclusion of clients in service design. In the studied sector, the domestic network, on which Indian firms rely, was considered source of reliable information and advices, as the local PV market is extremely small and, thus, professionals mostly know each other. References by partners, colleagues, suppliers and competitors are the principal source of information when a PV consultant has to be selected. A local stable presence is, thus, not only a requirement, but it also represents the best way to integrate locally and start establishing business relationships, characterized by mutual trust and esteem. These are, in fact, the only possible enablers that could allow local integration and, consequently, service adoption by Indian potential client.

In the light of this, a global network does not exist yet, as many countries are not completely acquainted with PV technologies and will probably better rely on suppliers and consultants that are known in person. The network on which Synertechnik relies is, thus, international in its nature, but it is not extended to all the countries of the world. It may be possible that among years even emerging markets enlarge their willingness to engage in exchange relationships also toward actors that boost international experiential knowledge, but until they will be completely acquainted with PV technologies, they would prefer local experiential knowledge, which is only present in those actors that are active in local networks. The concept of experiential knowledge has here a crucial role, as Indian preferences are not directed only toward local consultants', but toward actors whose knowledge is acquired and used in the local setting. The network on which Indian firms rely is not closed toward foreign PV consultancies, but it is constrained to actors that are locally committed, thus that have developed local knowledge. What Indian firms are looking for are consultancies that provide

solutions in line with their local requirements and whose reliability is ensured by local connections. At a literature level, experiential knowledge was first identified by Penrose in 1966, who counterposes it to objective knowledge. In KIBS, experiential knowledge is "*subtle and particularistic and accumulated by those who participate in an action. […] It is through experience that actors in a network approach each other and strong ties evolve. In business networks experiential knowledge is positive and rewarding for the interacting parties*"[153] (Forsgren & Johanson, 1992, p.5). According with Sharma (1983, 1984, 1985), the network on which firms rely determine the typologies of solutions expected and developed. In fact, in presence of domestic networks, knowledge would be constrained to domestic problems and domestically present actors, while in presence of international networks, the experiential knowledge and the ability to use it is influenced by interactions with several economies, culture, source of procurement.

The network has, thus, a double function: from one hand, it constrains actors on which each other rely to professionals that are committed and integrated locally, from the other hand, it clarifies that experiential knowledge is focused on solving needs showed by the network in which the firm is embedded.

Given these considerations, and with the aim to take a KIBS perspective, it is possible to distinguish countries on the basis of the network on which they rely, as it represents a fundamental variable able to influence the extent to which integration and commitment toward local needs is expected. It is, thus, possible to distinguish between international and domestic network:

- *International network*

  It represents networks in which actors belong to different countries and have developed experience in several contexts. Actors show openness to collaboration with foreign partners and their needs and preferences are highly homogeneous. It characterizes developed markets or those countries that have experienced similar technological development in terms of time periods and technological field.
- *Domestic network*

  It is the typology of network that mostly belongs to emerging markets or countries that are immature and have limited experience in particular technological fields. They generally show traits of skepticism toward unknown service providers and expect local commitment before accepting their offerings. Their partners may come from foreign countries, but they have to had acquired local experiential knowledge and they should

[153] Forsgren M., Johanson J., (cf. Sharma, 1983, 1984, 1985), 1992, *Managing Networks in International Business*, Philadelphia, Gordon & Breach, pp.5

know how to use it in the local setting. Only local references may increase chances of foreign professionals' acceptance.

7.1.2. Clients' degree of activities internalization

The second key variable of the framework is represented by potential clients' organizational structure. The importance of this element for the studied sector was pointed out since the beginning of empirical data collection, when Mr Kumar Singh highlighted Indian firms' preference for internally hiring personnel able to perform needed tasks rather than outsource activities. This preference was, however, extremely generalized in the respondent's affirmation, as further interviews demonstrated that willingness to hire external experts varies according with firms' sizes and related available budget. Largest firms, like Tata Power Solar and Waaree, have substantial financial resources, which allow them to attract and retain most skilled and capable professionals within their firms. In addition, Mr Ravi Kant, Tata Power Solar's general manager assistant, told that, in light of his experience among several Indian PV firms, small manufacturing firms enormously benefit from PV consultants' services, as these allow them to access knowledge internally missing. Personnel in these firms is rarely the most experienced, as this category is generally attracted by larger firms, who can offer greater compensation packages and benefits. Confirmation came also from Sun Switch general manager, Mr Kumar Tha, who is guiding a recently established firm and highly needs skilled professionals to correctly set up operations. Therefore, in India small firms tend to better appreciate outsourcing of activities, while larger firms believe in their employees and rarely require external service providers. The only case in which the latter category accepts consultants' involvement is when they are bearers of know-how missing among employable people.

Confirmation of these considerations comes also from literature, where several studies have highlighted that firms established in emerging markets rarely invest in innovation, as high level of uncertainty and huge institutional voids makes the environment extremely risky and characterized by low possibilities of innovation success (Back, Parboteeah & Nam, 2014). The support provided by external professionals works, thus, as a driver of innovation and a tool to overcome institutional weaknesses. In general, collaborations with consultants are more often appreciated by firms of small dimensions as they lack abilities and resources to overcome by their own institutional barriers. Larger firms, instead, are said to adopt well-integrated corporate governance structure in which several activities are developed internally with the aim to overcome institutional voids.

The argument introduced by Back and colleagues (2014) is particularly important for the sector under study as it offers a theoretical explanation of Synertechnik role as provider of technological updating and legal requirements for manufacturing firms. In fact, the company CEO, Mr Idolazzi, explained that small module manufacturers are often not even aware of some international standards' emergence or

modification and he has the chance to attract them while informing about changing requirements. This happens because small firms are rarely well integrated in networks and, thus, it is harder for them to come into contact with more recent information. These difficulties are even greater when thinking about firms from emerging markets, where institutional deficiencies are coupled with scarce resources for R&D activities and training programs. Therefore, it can be said that the role of PV consultancies may be decisive for small businesses survival in emerging countries.

However, the Indian large firms' tendency to devalue service providers is in contradiction with KIBS' origins. According with Tordoir (1993), KIBS resulted from large firms' downsizing, which realized that high specialization could not be reached through internal development of knowledge-intensive services. Externalization of these activities, instead, would allow service providers to experience a greater variety of situations and context and provide better solutions. However, it must be noted that this process of emergence verified in particular in developed countries. This means that a distinction between actors' preferences in developed countries versus emerging ones must be done: outsourcing of knowledge-intensive activities is preferred by large firms in developed countries and by firms of small dimensions in emerging ones.

The above-mentioned distinction between the sizes of firms that mostly prefer PV consultancies' services is of limited interest for the framework purpose. It has been introduced to highlight that KIBS must carefully analyse the organizational structure of firms present in the market they are targeting, as they may be biased by their previous experiences and expect large firms to be their target clients in every market. The following matrix aims to describe "how" KIBS should target clients according with their preferences, not "who" prefers specific organizational structure, even if it is now clear that Indian clients are different from those faced since now in developed countries.

Therefore, more considerations must be given to the typologies of services that potential clients are willing to purchase on the basis of their structure preferences. As already said, also those firms that usually underestimate KIBS usefulness may need their services when knowledge about specific technological fields is missing among local employees and employable people. Thus, both firms that internalize and those that externalize activities are potential clients of KIBS. What changes is, however, their preference for the service itself or for the know-how embedded in the service provision. As the interview with Manish Bhatnagar has shown, when firms tend to internalize the majority of activities, they may accept PV consultants' services only as a source of new information, that could not be grasped in other manner. In fact, the respondent was enthusiastic about diagnostic services offered by Italian PV consultants, but he was not interested in establishing a long-term relation aimed to obtain the analysis of his production line. Instead, he asked about the possibility of buying the equipment needed for internally performing tests and, eventually, hire someone experienced in this equipment use for the period of time necessary to become acquainted with the technology. This kind of firm is,

thus, not interested in having a professional able to show if firm's internal operations are correctly working or not, but managers are willing to access the know-how embedded in the services offered by PV consultants, with the aim to learn how perform specific activities by their own. Instead, when firms outsource knowledge-intensive activities to external professionals, they are interested in getting advices, establishing long collaborations and obtaining technicians' opinions about their operations. In this case, they are interested in the outcome of tests and studies, not in how specific analysis are conducted. This latter category is the one that better fit with traditional role of KIBS, as providers of objective advices (Sharma, 1985), but firms should consider this distinction as a key variable able to influence their offering and acceptance.

In particular the following distinction is considered for the framework purpose:

- *Internalization of activities*

  Firms tend to develop knowledge-intensive activities in-house and require KIBS advices only to access know-how internally missing. They expect short term collaborations and highly interactive, where skilled and competent internal staff will be joined by external professionals as long as it will learn how to perform specific operations.

- *Outsourcing of activities*

  Firms recognize that KIBS specialization could not be reached internally or they do not have the budget necessary to perform specific activities in-house. They hire service providers for their objectivity and superior know-how, and they expect them to bring solutions to internal bottlenecks. They are interested in reaching a specific result and they do not care about the methodology adopted by KIBS to reach it.

7.1.3. The matrix

The two above-mentioned variables are plotted together in the following figure, presenting the four different approaches that KIBS may have to evaluate on the basis of target market characteristics.

Fig. 11: KIBS Internationalization strategy

a. Adaptive Customization Approach

The first approach identified characterises those market that have experienced a similar technological development path and, thus, present homogeneous needs and preferences. In these markets, clients generally appreciate outsourcing of knowledge-intensive activities and they are embedded in internationally open networks, where knowledge easily flows from one country to another and services greatly meet many countries' requirements. This approach is the one that mostly fit with traditional KIBSs' expansion, as their founding idea was that of spreading niche know-how on a worldwide basis.

KIBS that operate in these markets can, thus, exploit services developed in their home country or through international collaborations and offer them in other markets that present similar conditions. Firms do not need to hire local technicians, but they can send home-based or international personnel to foreign countries. The term international aims to highlight that collaborators may come from any country, as their nationality does not influence service perception. Clients, in fact, are comfortable with international professionals, as they usually boost similar education and experiences, working as business people who travel the world. In addition, the international openness means they are aware of rareness and difficulties of face-to-face interactions, but they accept this condition as the only way to collaborate with KIBS that boost high experience in several countries and with different typologies of clients. Therefore, internationality of KIBS represents their higher value-added, as client firms recognize the importance of a service provider specialized in a niche sector and able to offer its services to several countries. Resulting meetings in person will be sporadic, but interaction will last in the long-term, strengthening business relationships between actors present in the international network.

The approach defined for these markets is that of adaptive customization, which has traditionally been developed for goods that are produced in a standardized manner, but which can be customized by customers (Gilmore & Pine, 1997). In KIBS offerings, adaptive customization means that standardized typologies of services are developed in the home country and through experiences gained thanks to interactions with clients from different countries. Services are successively adapted in contingent elements, like delivery systems, lead times, degree of physical presence and other similar characteristics. In this way, specific typologies of clients or market segments' requests are satisfied, while exploiting a clearly defined set of services. In fact, the approach implies great integration of clients in the configuration of service characteristics, but the majority of basic aspects are pre-set and lead to precise outcomes, independently from incidental elements.

In this setting, clients are purchasing the outcome of the service, which can be represented by a report, any sort of documentation or an opinion, and they are receiving it in the way that mostly meet their preferences.

b. "Best of" approach

The second approach has been defined "*Best of*" to highlight the necessity for KIBS to identify and grasp the best know-how available on international level. Markets that need to be addressed with this kind of approach are those highly open to international networks that have experienced similar technological development, but where firms tend to internalize most of knowledge-intensive activities.

The typology of clients present in these markets are particularly interested in coming into contact with know-how missing internally, which can be exploited and melded with their knowledge and competences to lead to innovation in internal operations. In order to do that, they are willing to collaborate with KIBS coming from whatever country in the world, and they are indifferent to consultants' nationality or cultural background. All people that participate in this kind of activities are, in fact, part of international networks and do not perceive any sort of bias toward foreign consultants. Actually, being foreignness is often considered a necessity, as it would provide access to know-how not only absent in the firm's operations, but, potentially, also in the domestic market. In the light of this, selected KIBS are only the best in class, which are renowned for their uniqueness and which are able to bring together knowledge accessed around the world.

Therefore, KIBS strategy to engage in business relationships with firms operating in these markets should leverage over R&D activities at international level. KIBS should make themselves knowledge prospectors, able to identify valuable inputs from different countries and mix them together to create innovative technological advancement to be presented through saleable training programs. In this sense, knowledge-intensive firms should grasp the best and most promising know-how dispersed

around the worlds to successfully approach client firms, whose requirements are similar and, thus, addressable through training programs almost standardized in their contents.

This strategy can be pursued only through the employment of professionals with different backgrounds, culture, country of origin and capabilities, who would travel the world to discover and develop innovative technological know-how that would be spread among countries. Clients firms, in fact, would not be interested in purchasing specific services, but they would be interested in finding bearers of innovativeness with which start short, but intensive collaborations since technological advancement would be correctly integrated in internal operations. In this case, interactions would be concentrated in short periods of time where face-to-face meetings would have to be carried on since the end of collaboration. Anyway, there would rarely be formal or informal agreements of long-term collaboration, as clients would easily turn their interest toward other service providers, if the latter would bear more advanced technological competences or knowledge that former service supplier.

c. Local Knowledge-Driven approach

When clients' preference for internalization of knowledge-intensive activities couples with importance of domestic network rather than international one, KIBS strategy should dramatically change.

In those markets where local embeddedness and domestic commitment result as a necessity for being accepted and considered by local firms, KIBS should adopt an internationalization strategy driven by absorption and increase of local technological knowledge. Local firms, in fact, expect KIBS to work as providers of innovativeness and technological advancement, which, however, does not necessitate to be the best and ultimate advancement, but it should be the know-how needed to solve domestic problems on the basis of local state of technology, production lines and operations. Clients, in fact, expect KIBS to know and understand their environment, and provide solutions and teachings able to satisfy their specific needs.

In order to do that, service providers should invest in the local market, establishing local operations and site offices, demonstrating commitment in building business and personal relationships. The best way to do it is through a stable presence, which would allow firms to demonstrate their desire of grasping clients' needs, while also offering the possibility of gaining local experiential knowledge and, consequently, access the know-how necessary to provide customized solutions. KIBS interested in doing this have, thus, to establish local R&D centres, as the only way to progressively join local network and gain members' trust and esteem. Personnel employed should, then, be both part of local market and part of the foreign one, creating a working environment suitable for technological development and innovativeness, but also in favour of integration. As already said in the previous chapter about domestic networks, the employment of local personnel is not a sufficient method to demonstrate commitment toward a specific country, as formal and informal collaborations between professionals

from the different countries are needed in order to build up a relationship of confidence and transparency.

Only after being accepted as an insider of the domestic market, KIBS will be able to sell their services, which will be constrained to customized training programs and consultancy (in the sense of know-how providers). Firms that internalize knowledge-intensive activities would, in fact, accept interactions with external experts only in relation to refresher courses or training courses aimed to enlarge internal technological knowledge and competences. Therefore, training programs would have to be created and developed *ad hoc* for the specific market segment, showing distinctive elements in the know-how embedded and in the typology of problems addressed. Interactions would be intensive and constrained to short periods of time, without guarantee of long-term collaborations. However, compared to "best of" approach, here clients expect KIBS to be always present in their neighbourhood, as a demonstration of their constant interest toward local dynamics.

d. Local service-driven approach

The last approach targets those markets where firms still rely on their domestic network for references, suppliers' selection and consultancy reliance, but they decide to outsource knowledge-intensive activities to external professionals. The reason of their preference is sometimes their size and budget constraints, while in other cases they recognize the superior expertise and specialization reached by professionals compared to internal technicians.

As in the previous case, firms that are embedded in domestic networks tend to accept and evaluate only KIBS that belong to the same interactional environment. Thus, service providers should first integrate themselves and their services in targeted markets, before expecting great amount of sales. Again, experiential knowledge is a fundamental aspect of the entry strategy, as KIBS must understand local technological status of development and its related issues in order to develop a set of services specifically tailored on that network's requests. In this case, in fact, clients are willing to purchase specific services that help them to solve internal problems, without taking care of the methodologies and types of technologies adopted to reach desired results. They expect KIBS to provide solutions to clearly defined problems, requiring services *ad hoc* developed for their market segment's requests.

Service providers have, thus, to adopt a local service-driven approach, in which existent know-how is transposed in new offices established in the target country and is melded with local technological knowledge to develop services able to correctly address existing issues. Investments in the target country are again considered a necessary condition to demonstrate commitment and interest toward actors present in that network. More than that, firms expect higher interactions than in the previous case, as service providers should be located close to clients' facilities and always be available for

emerging needs. In this setting, interactions are more frequent and continuous over time, leading to creation of true ongoing collaborations that last in the long-term.
To simultaneously facilitate business relationships building and local services development, local and foreign personnel should cooperate in local offices, creating opportunities for technological advancement and integration of foreign actors in the local network.

The four approaches cannot be attributed to specific countries, as they are developed to describe internationalization strategies of the broad category of T-KIBS and, thus, they simultaneously refer to several technological fields. In fact, in each country there may coexist an open international network for, for example, IT services and a close domestic one for engineering services, showing that different typologies of KIBS are embedded in different kinds of networks. In addition, in each specific technological field there may be firms that internalize knowledge intensive activities, while others may prefer to outsource them. Another aspect worth of attention is then the restricted sample on which conclusions have been developed: even if the decision of adopting an embedded case study design has allowed the consideration of several units, each of which was bearer of different kinds of interests, the company analysed was only one. Therefore, a framework developed on the basis of a single case study cannot ensure its applicability to all the existing sectors, countries and technological fields, but it represents only a first attempt to identify relations that characterise and influence KIBS expansion.
In light of this, it is necessary to focus the attention again on the studied sector in order to develop concrete conclusions without the risk of excessive generalization.
In detail, the PV consultancy sector has demonstrated that huge differences exist when internalizing in emerging markets in comparison to developed ones. In particular, the embeddedness in an international network joined by actors that have experienced a similar technological development path has allowed PV consultancies to expand their operations adopting a born global approach. Members openness toward rare and sporadic interactions, and their absent biases toward consultants' nationality, culture and background were the key drivers of PV consultancies' success in developed countries. The possibility of performing activities without the necessity of highly investing in target markets allowed this peculiar typology of KIBS to expand their operations going solo and relying mostly on informal collaborations among actors. In the light of this, the two approaches that refer to international networks, *"best of" approach* and *adaptive customization*, greatly describe how they have targeted and satisfied their clients' needs.
However, the interest shown by these firms toward emerging markets, and in particular India, poses huge challenges, in particular for what concerns the difficulty of correctly integrating in the local network and the importance that successful embeddedness has for service providers' acceptance. Following the matrix, KIBS willing to expand in this market should follow the *local knowledge-driven*

approach and the *local service-driven approach*, according to the typology of clients they are willing to address. To increase their chances of success, strategic alliances or joint venture should better be evaluated, as they would allow sharing of costs, faster learning, reduced asset commitment and risks, but above all, these forms would smooth the difficulties of integration.

The different consideration attributed to KIBS by firms in emerging markets in comparison to those in developed ones have also great implications in terms of willingness-to-pay, which should then be addressed by KIBS in pricing policies. Starting from the assumption that firms operating and collaborating in international networks are aware of the value-added of services and know-how provided by service providers with international experiential knowledge, their willingness-to-pay is definitely higher than that of firms in domestic networks. Those that belong to the latter category, in fact, consider proximity and local presence elements of justification for lower willingness-to-pay. All the Indian interviewed people referred about price concerns as one of the first reasons that would lead them to prefer firms with local presence rather than those operating without established facilities. In fact, on the basis of previous experiences and/or conventional wisdom, they told that PV consultants that need to travel to reach their clients automatically require high prices and additional reimbursement of travel expenses. Indians have economic and non-economic reasons to reject this kind of collaborations, as their profit margins are too small to bear high costs and, moreover, they are culturally lead to prefer services specifically developed to meet their technological issues.

From the KIBS perspective, also costs have to be carefully evaluated when directing the expansion toward emerging markets rather than developed ones. In fact, even if adaptive customization and, in particular, "*best of*" approach implies greater costs than the other two strategies, clients addressed are not highly concerned with expenses. In particular, the "*best of*" approach would imply higher costs than all the others, because of R&D and coordination activities, which would have to be planned and organized at international level. In this approach, the research field would be that of greater impact on overall costs, as experts would have to be sent in several countries; in addition, their findings would need to be melded together in order to be exploited and spread among international clients. Travel expenses are, instead, the most relevant factor that influences costs in the adaptive customization approach. In this case, services are standardized to some extent and, thus, the most demanding aspect is that of selling them in several countries.

When it comes to those approaches developed to meet local networks' requests, the establishment of facilities and the employment of expatriates would highly impact on KIBS' costs concerns. However, as shown by data collected in chapter six, local workforce may present salary levels well below those of developed countries. In this setting, R&D activities would be developed exploiting low-cost labour

force, supervised by highly skilled expatriates, which would allow the alignment of public prices to price bands locally proposed.

7.2. The case study perspective: Synertechnik strategy

The analysis of Synertechnik case study has allowed to understand the reasons that has permitted PV consultancies to internationalize their operations adopting a born global approach. More than that, the developed framework contributes to existing literature on T-KIBS internationalization presenting how the typologies of services offered and the organizational structure of these firms should change on the basis of target market segments.

As already said, Synertechnik foreign operations have been characterized by an adaptive customization approach until now, as the majority of actors with which it interacts share a similar technological development path and are embedded in an open international network, where actors do not perceive physical and psychic distance as barriers to successful collaboration. Its service provision is greatly standardized to meet firms' requests of support with regard to quality litigations, national and international standards' requirements and PV related technological issues. In fact, what Mr Idolazzi, Synertechnik CEO, has celebrated as hallmark and greatest value-added of its firm's operations is the great customization applied to delivery systems.

In targeting emerging markets and, in particular, India, Synertechnik should reconsider its *modus operandi* to meet local pressures for a stable presence and an evident commitment toward local market. In order to do that, the firm should adopt a local knowledge-driven or a local-service driven approach, which would gradually lead to the development of local experiential knowledge. In fact, until now, the firm has always leveraged over international knowledge that was the only one requested and appreciated by existing clients. Moreover, the two approaches identified to drive Synertechnik expansion in India must be evaluated on the basis of the market segment with higher prospective profits. On the basis of the interviewed firms' answers, the distinction between firms' preference for internalization or outsourcing of activities seems to correspond respectively to firms of large and small dimensions. In fact, as highlighted in paragraph §7.1.2, data collected showed that small firms require external consultancies for specific services, while larger ones resort to them only to obtain information and know-how internally missing. In particular, as can be seen from the following figure, India largest firms like Tata Power Solar and Waaree may be addressed through a local knowledge-driven approach, while smaller ones as Himalayan Solar and Sun Switch are willing to purchase specific services and establish longer collaborations, which would be provided by PV consultancies adopting local service-driven approach.

Fig. 12: Interviewed firms in KIBS internationalization matrix

As Synertechnik has always adopted an adaptive customization approach until now, it has to carefully evaluate whether to target larger firms, as it does in developed countries, or shift the attention toward smaller ones, which need specific services and solutions.

Suggestion is that of approaching the market focusing mostly on small firms or those that, independently from their dimensions, need support and assistance directly in their operations, as the services they require are similar to those currently developed by Synertechnik. This market segment would impose on Synertechnik the study and the development of a service provision customized to local requests, but which could then be exploited among the whole country. Through a local service-driven approach, Synertechnik can adapt its existing international know-how to local needs and design services exploitable with several clients, creating a sort of design suitable to reduce variation. In addition, the number of services needed by these firms is larger than the requests of collaborations coming from larger firms or know-how prospectors, and the frequency of interactions is consequently major and continuous for substantial periods. Needs of long-term collaborations and repeated interactions are a good way to make the firm's name and services known, create lasting business relationships and integrate in the local network.

The local presence should, then, be established through a joint venture with locally important equipment suppliers. The form of the joint venture is suggested because the presence of Indians investing in a shared business activity would send local firms a message of reliability. More than that, the selection of an equipment supplier is critical, as providers of equipment for production lines or testing laboratories set-up are highly trusted by firms and business relationships with them are necessarily maintained because of warranties periods. The promotion of Synertechnik services directly driven by this kind of suppliers would allow higher consideration from firms and greater trust. In addition, equipment suppliers are contacted when firms start their operations and, thus, they are more

in need of suggestions and advices on a broad range of applicational fields. The presence of consultants in that moment may allow the establishment of long-term relations, as they may be contacted in the following periods to increase productivity, and provide support in operation and maintenance. In this way, gaining clients' trust since they present embryonic form would create chances of being considered a trustworthy partner in case of quality litigations, but also for the whole life-time of client firms. This means that Synertechnik would follow firms' growth and would start having contacts with large firms in a natural and spontaneous manner.

Another aspect worth of attention is that of control over commercial and administrative operations. Mr Idolazzi, Synertechnik CEO, talked about his desire of delegating only technical services to local personnel and maintain in the headquarter the control over the other activities. This kind of approach would not transmit a message of local commitment and desire of inclusion, as potential clients would perceive a sense of skepticism and lack of confidence in local personnel. A potential solution could be that of sending expatriates to manage operation and, thus, ensure transparency in communications with the headquarter, while simultaneously exercise control over local operations. In addition to management, also some international or domestic technicians would need to be sent in the target country with the aim to train new staff, transmit the corporate values and spread the internal know-how. These technicians should be selected between those collaborators highly trusted by the entrepreneur. The coexistence and collaboration between local and foreign personnel would allow an easier and faster integration in the local network, while also ensuring lower costs. The control over costs is another fundamental aspect, as interviews' respondents highlighted that consideration to quality of offered services is only marginal when final prices are excessively above average. In the light of this, delegation of many activities to local offices would ensure reduction of costs and consequent maintenance of prices in the average.

To strength inclusion in the local network, collaboration between foreign and local personnel would not be sufficient, but it would be necessary also to create deep connections with clients. Technicians would have to demonstrate a positive learning orientation and a strong desire of understanding their needs with an open-minded. More than that, participation of clients in service development and delivery systems' characteristics would be crucial in early periods, as the reputation built with first interactions may influence the firm's image in the country for its whole life-time.

Finally, the decision of when to start local operations should not require long periods of time, as the market potential is currently extremely high thanks to the status of development of the National Solar Mission. In addition, according with Johanson and Tellis (2008), the Indian market has always to be targeted when specific needs start arising, as the local brand loyalty is extremely high and, thus, early entrance would allow to retain most of clients. The moment is favourable for expansion also from an

administrative point of view, as the Government is posing huge efforts to attract FDI and facilitate procedures to start a business or establish a local office.

Therefore, Synertechnik is encouraged to start its internationalization in India, which may represent the starting point for further development in other emerging countries and, in particular, in the Asiatic continent. Differences between markets in which it currently operates and new targeted ones are, in fact, not necessarily barriers to successful expansion, but they may offer opportunities for new technological advancement despite they impose an internal reorganization. Thus, it is fundamental to "treat differences across borders as opportunities, not as constraints"[154] (Ghemawat, 2007, p. 169).

[154] Ghemawat P., (2007), *Redefining Global Strategy – Crossing borders in a World where Differences still Matter*, Harvard Business School Press, Boston, p. 169.

Conclusion

In line with declared purpose and research question, this dissertation has analysed the internationalization process of KIBS in emerging markets, starting from the study of a particular sector. The absence of existing literature on PV consultancies offered the opportunity of investigating a niche sector of recent emergence, which has experienced great expansion in developed countries and it is now starting targeting emerging markets, thanks to their increasing commitment in renewable energies adoption.

The National Solar Mission launched by India in 2008, and the Synertechnik interest toward local market, offered a favourable setting for studying KIBS expansion. Data collected through observation and direct interviews have been combined with existing literature with the aim to develop a framework able to highlight the major differences faced by knowledge-intensive firms when expanding in emerging markets rather than developed ones.

In particular, the answers of the case company CEO and those of Indian managers belonging to potential client firms showed a different consideration of the relevant network for sourcing, references and advices. In fact, while the Synertechnik case reported of the existence of an open international network on which all firms rely, the Indian respondents highlighted the importance of local presence, experiential knowledge and commitment as key success factors for service providers acceptance. Another crucial distinction emphasized by the two Indian subunits analysed, namely the Synertechnik local agent and the potential client firms, was the degree of internalisation of activities preferred by firms among countries. In Italy and in those countries in which Synertechnik currently operates, knowledge-intensive activities connected with PV technologies are generally outsourced to specialized technicians, who can offer reliable advices and opinions among the whole value chain, from components' production to the real efficiency delivered to final clients. In India, instead, firms tend to internalize or outsource activities on the basis of their size and budget constraints. Previous studies have explained large firms' preference for internalization as a way to overcome institutional voids that highly impact on their operations and R&D activities (Back, Parboteeeah & Nam, 2014). Data collected through interviews may reconcile with previous studies conclusions, but they emphasize, above all, the crucial role played by large firms' ability to attract and retain skilled personnel. As their financial resources allow the employment of truly capable personnel, they may not need external professionals or they may require their advices only to a limited extent and for short periods, leveraging over their employees' great absorption capacity. From the other hand, small firms that miss large resources needs experts support and advices as the only way to access know-how and services not performable by their own.

In the light of this distinction, clients' preference in terms of degree of internalization of activities has to carefully be evaluated by KIBS planning to expand abroad, as it influences what clients are expecting and willing to purchase. In fact, while firms that outsource activities would look for support to obtain a specific result/service, that may be expressed through a report or the implementation of a specific system, those that internalise activities would contact KIBS only to obtain know-how not available within employed and employable people. In the latter case, collaborations would last for very limited periods of time and would rarely be repeated among time, while in the former there may be possibilities for the establishment of long-lasting business relations.

Therefore, while plotting together the network and the clients' degree of internalisation of activities, the matrix aims to describe the extent to which KIBS strategy should adapt to local requests and environment characteristics when evaluating emerging markets instead than developed ones. Their combination leads to the development of four approaches, named *adaptive customization*, *"best of", local knowledge-driven and local service-driven* approach. While the first two approaches may be adopted when targeting international networks where biases toward consultants' nationality and local presence are not influential, the last two refer to those markets where firms strictly rely on domestic contacts or foreign actors that are well-integrated in the local market. In the adaptive customization approach, KIBS may exploit developed services at international level, leveraging over home-based personnel or international one. In the local service-driven one, instead, firms should adapt their service provision to local requests and state of technology, integrating in the foreign country through a stable presence and developing local experiential knowledge. When it comes to "best of" and local-knowledge driven approach, targeted clients are those firms that are only willing to access internally missing know-how and exploit it for internal operations. The distinction between them relies in the typology of services required by clients: while the former category aims to grasp the most advanced and better developed technological inventions, clients from the second group expect innovations to be developed exactly in their home country and with the precise scope of addressing local technological issues.

In addition to the framework, which represents only a first attempt to describe the main differences that KIBS should address among countries, the study has illustrated that services traditionally offered by PV consultancies meet different degrees of interest when proposed to clients from different countries that do not belong to the same network. Another distinction worth of attention was, then, the changing values and consideration that clients attribute to these professional figures, which are celebrated as providers of innovativeness in emerging markets, rather than for their independence as it happens in developed ones.

The reason for these huge variances has been attributed to the different technological development path experienced by countries, which was gradual and shared in developed markets, while it is fast

and under development in emerging ones. Similar experiences have, thus, shaped networks, in which actors now share a sense of belonging and embeddedness that influences their opinion and acceptance toward KIBS services. As a result, service providers would have to face a completely different environment on the basis of the local state of technological development and the typology of participating network. This would have implications not only on the degree of adaptation needed to meet local clients' requests, but also, and more important, on the approach with which entering these markets in order to be accepted.

According with the research strategy selected, reached conclusions are then extended to the case study company, with the aim to develop some managerial implications. In fact, according with Yin (2003), the main risk of the embedded case study design is that of losing the whole picture and not come back to the central unit after analysing each sub-unit. In this case, advices have been provided on the main distinctions that should be done when evaluating the various market segments and the strategic decisions that would highly impact on the firm's chances of success. In detail, it has been suggested to prefer a joint venture with a well-established firm of equipment supplier, instead than other more hybrid form of governance. The proposed structure would allow to access local knowledge, share risks and expenses, make themselves known and enter the local network through a reliable partner. In addition, considering the importance of reputation and embeddedness, the firm should send expatriates to monitor local operations, ensure that firm values are respected and, above all, to develop business and personal relations with local employees. Another crucial suggestion is, then, that of leaving some degrees of autonomy to local facilities in order to lay the foundations for a trusted working environment.

On the basis of the answers received by interviewed firms' managers, Synertechnik is also suggested to address small firms or those that, independently from their dimensions, need support and assistance directly in their operations. These market segment, in fact, requires services similar to those currently developed by Synertechnik in other countries and, even if it would impose on the KIBS the study and the development of a service provision customized to local requests, developed services could then be exploited among the whole country and, in the long run, also in other Asiatic countries.

Finally, some limitations of the reached findings must be expressed: first and foremost, the managerial implications developed for the case study company cannot be generalised, as they have been developed on the basis of a specific corporate setting and for a selected target country. Secondly, the framework needs to be tested for other emerging markets and technological fields. In fact, even if reached conclusions have been developed through the combination of a deep observation, several interviews with key decision makers and an articulated literature review, each country and

technological field present distinctive features that may lead the framework to not be fully or partially applicable. Therefore, further researches may test the reliability of the framework for other settings.

Appendix I: Interview Guide – Synertechnik CEO

PERSONAL

1. Name
2. Working position
3. Professional career
4. How much would you rely on your personal network for business operations?

COMPANY

Foundation

5. When was it founded?
6. Which was the initial founding idea?
7. In which country started its activity?

Current situation

8. Which is SYN core business?
9. Are there other additional kind of activities?
10. Which is the competitive advantage of SYN?
11. How does SYN operate? (n° of employees/collaborations, foreign offices)
12. Which is the percentage of operations that are conducted abroad?
13. In which countries do you operate?
14. Which were the primary driving forces for your decision to start exporting?

Internationalization strategy

15. How do you search for new clients?
16. How did you become aware of foreign opportunities?
17. How do you start your operations abroad? (need of help/assistance)
18. Which are the main barriers/difficulties that you have experienced in working at a worldwide basis?
19. What do you do to reduce them?
20. Did you have to adapt your services to some extent to meet foreign clients' needs?
21. In which countries are you willing to expand in the future?
22. Which is your internationalization strategy for these markets?

CLIENT – SUPPLIER INTERACTIONS

23. Which kind of approach do you adopt with your clients?
24. How much importance would you attribute to client-supplier interactions?
25. How does it change among countries?
26. Do you offer after-sale support?
27. Have you ever reached service advancement through client collaboration?
    (e.g. development of advanced equipment thanks to client participation/necessity to adapt to his needs)

Appendix II: Interview Guide – Synertechnik Agent

PERSONAL INFORMATION

1. Current job
2. Your position within Synertechnik
3. Previous experiences connected with PV

CUSTOMERS' KNOWLEDGE ABOUT PV CONSULTANCY

4. Are there in India figures that are independent from EPC and modules producers (which we call PV Consultants)?
   IF YES, which kind of services are generally offered by PV consultancy in India?
5. Are diagnostic services diffused in India?
6. There is a surprising increase in the adoption of PV in India, do you think that people may consider to adopt a foreign consultant to reduce the risk of damages (whether caused by EPC or modules producers)?
7. What about the adoption of diagnostic services through production line: do you think that modules producers are ready to pay for ensuring higher quality to their customers?
8. Which is modules producers' willingness to pay for this kind of service?
9. What that of owners?
10. India is establishing Solar cities, are they adopting consultants? Do you think they should?
11. Which do you think is the value added that people may gain from an independent consultancy like the one offered by Synertechnik?
12. How smooth is the certification process of modules producers in India? Are there consultants that offer support in the certification?
13. How do you think a foreign consultant for certification would be perceived?
14. From your point of view, which is the nationality perceived as more reliable by Indians in technical consultancy?

SYNERTECHNIK AGENT – CONTACT WITH CLIENTS

15. Which language do you adopt with potential clients?
16. How much do you emphasize that the company is Italian based?
17. How much is it appreciated worldwide experience?
18. Do you think that belonging to a country that is more advanced (from an economic point of view) may have an impact (for example in respect to higher technological reliability) on how consultancy is locally perceived?
19. Which are the aspects of SYN that you better enhance when proposing its services to Indian customers?
20. How much importance do you attribute to client-supplier interactions?
21. Do you think that cultural distance between Italy and India may affect client-supplier relations?

Appendix III: Interview Guide – Potential Clients

PERSONAL

1. Name
2. Working position

COMPANY

3. When was the company established?
4. Which is your annual production volume?
5. Do you sell mostly in India or worldwide?
6. Do you adopt English as official language within your company? (*documents, official meetings)*
7. Are your modules certified?
8. Do you have a testing laboratory within your company?
9. If your company had to hire a consultant, who would take the final decision? (*e.g. CEO, Technicians*)

CONSULTANCY

Awareness of consulting services

10. Do you know that consultants exist able to help you through certification process of your panels (thus helping you to understand which tests to perform and how)?
    IF YES, which are aspects of their activities that you consider more valuable?
11. Do you know that these consultants can help you in setting up an internal testing laboratory to test modules by your own before official test are performed by certification bodies?
    IF YES, which are aspects of their activities that you consider more valuable?
12. Do you know that diagnostic tests exist to check that your production process does not ruin modules?
    IF YES, can you mention some of them?

Motivations to hire a consultant

13. Have you ever hired/would you hire an external consultant to guide you in the certification process? Why?
14. If you would have to establish an internal testing laboratory, would you consider the assistance of a consultant? Why?
15. Have you ever hired a consultant to perform diagnostic tests on you PV modules? Why?
16. Which is the main reason that would lead you to hire a consultant?

Factors that influence buying decisions

– Suppose you are going to hire a consultant:

17. How would you look for a consultant?
    (*e.g. on the web, international exhibitions, asking to your business partners/networks...*)
18. Do you consider different criteria when evaluating a foreign and a local consulting firm?
19. Would you value more international consultants with worldwide experience or specialization in the Indian market? Why?
20. If you would have to select a foreign consultant, which are the company characteristics to which you would pay higher attention?

(*e.g. COO, company size, experience, Wide range of service offered, Brand…*)

21. Which would be the service characteristics that would convince you to choose that consultancy instead than another?
    (*e.g. Offering of extensive training, price, standardized vs ad hoc developed programme, presence of follow-up programmes*)
22. Suppose a foreign and a local consultancy offer the same (identical) kind of services, which one would choose? And why?
23. Which are the personal characteristics of a consultant that you would better appreciate?
    (*e.g. nationality, language spoken, friendly person, young/old person…*)
24. Do you think that consultant nationality may influence your final decision?

Preferences in client – supplier interactions

25. How much importance would you attribute to interactions with consultant?
26. To what extent would you think that cultural differences may affect a successful collaboration?
27. Is it important for you to meet consultant in person since negotiation phase?
28. Suppose that you are hiring a foreign consultant, would you be comfortable if most of interactions were conducted through indirect form of communication and/or Skype?
29. Suppose that your consultant is not Indian, how would you react if he would give you advices regarding some business operations on which you did not require his opinion? And would you believe him?
30. Would you have more confidence in a foreign or in a local consultant?

Factors that determine satisfaction/dissatisfaction

– Suppose you hired the consultant and you have reached certification/get a report on modules' conditions/established internal testing lab:

31. Which are the factors that would make you truly confident in consultants' advices? Do they vary between a foreign and a local consulting firm?
    (Knowing him in person, nationality, age, experience…)
32. Are there other elements that would you evaluate as important as the achievement of the final result?
    (*Uniqueness of the service, strength collaboration, creation of long-term relation, short lead times*)
33. Would you appreciate follow-up visits or other form of collaboration that creates long-term working relationship?
34. Would you suggest consulting firm to other people or would you try to keep his name secret and exploit your services only for your benefit?

Factors to mitigate dissatisfaction

– Suppose you have hired the consultant and you have NOT reached certification/you are not satisfied for how diagnostic tests have been performed or with how the testing lab has been set up:

35. What would you do?
36. Would you expect something from the consulting company?
    (E.g. reimbursement, performance of tests a second time for free, discounts for additional services)
37. Would you hire the same consulting company a second time if someone also tells you that they are truly professional and you have just been unlucky in your previous experience?

38. Does your behaviour in case of dissatisfaction change when considering a local or a foreign firm?

ASSESSMENT OF ITALIAN CONSULTANCY POTENTIAL

39. How reliable do you think Italian consultants may be? Would you hire them?
40. Do you consider geographic distance between India and Italy a problem?
41. Do you think that an Italian consultant may be able to truly know the complexities that characterize India from an administrative and economic point of view? Has it an impact on your selection to hire or not Italian consultants?
42. Would you be more comfortable if the Italian company had Indian consultants? Or would you prefer Italian ones?
43. Would you be more confident in a foreign consulting firm that works in partnership with an Indian firm?

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