Universidad de Deusto
Deustuko Unibertsitatea
Deusto

**Deusto Business School**

# Tesis Doctoral

## Dynamic Capabilities: A Key Factor in Small and Medium Sized Enterprises' Internationalization and Growth

**Leonardo Iebra Aizpurua**

**San Sebastián-Donostia, junio de 2015**

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Directores:

Cristina Iturrioz Landart
Universidad de Deusto

Oskar Villarreal Larrinaga
Universidad del País Vasco

Doctorando:

Leonardo Iebra Aizpurua


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*A Nevis y David, mis padres, que son mi inspiración*
*y me enseñaron a nunca darme por vencido*

*A María, mi esposa, por su comprensión, apoyo y amor incondicional*

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# INTRODUCTION TO THE RESEARCH

## Purpose of the dissertation

With the aim of advancing business literature and providing valuable tools for internationalizing SMEs, scholars and government institutions have long been focusing on the identification of the driving factors that determine firm performance. Despite the great interest and the numerous research projects addressing this issue, there are still numerous unanswered questions and several conflictive issues still open to debate.

Business researchers agree that in order to be successful in domestic and international markets, firms need to develop a pool of resources and capabilities that are relatively unique and inimitable (Penrose, 1959; Wernerfelt, 1984; Barney, 1991). Additionally, since markets are continuously changing, businesses need to develop capabilities to adapt to the environment, and to identify and respond to new business opportunities (Teece *et al*. 1997). Adaptations could take many forms: the transformation of organizational processes, the reallocation of resources, or the development and transfer of new knowledge (Easterby-Smith *et al*., 2009). The ability to generate, adapt, allocate and use resources is a critical element driving business success.

Despite the importance of capabilities on business' internationalization success, business literature has almost exclusively looked at personal, cognitive and behavioural characteristics of entrepreneurs and business owners (Knight and Cavusgil, 1996; Moen, 2002; Kundu and Kat, 2003; Rialp, Rialp, Urbano and Vaillant, 2005; Jones and Coviello, 2005). Unfortunately, the focus on these cognitive characteristics has not managed to properly explain why some SMEs are able to internationalise, while others are not (Gassmann and Keupp, 2007). There is a need to pay attention to the structural and organisational characteristics of SMEs that enable internationalization and the development of competitive advantage. Particularly, it is important to understand what the specific capabilities are that an SME needs in order to influence its performance and competitiveness. Yet, little is known about how capabilities evolve in international firms (Easterby-Smith *et al*., 2009), and what specific capabilities are needed to successfully enter and grow in international markets (Zahra *et al*., 2000; Ethiraj *et al*., 2005).

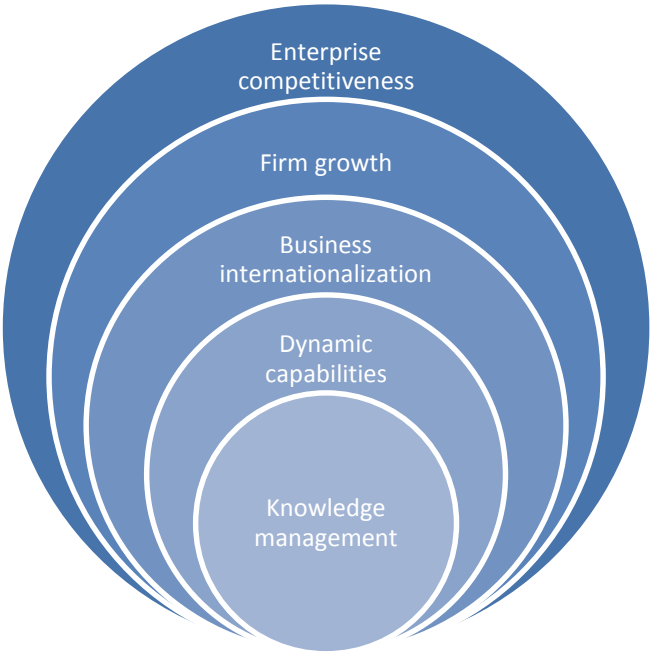
This dissertation attempts to partly fill this knowledge gap in the business literature by exploring how a specific set of capabilities, dynamic capabilities (Teece *et al*. 1997), affect growth and internationalization in small and medium sized enterprises. It will try to determine whether international businesses need to develop unique capabilities to succeed in international

markets, and to understand the role of the knowledge management capability in SME internationalization success.

## Theoretical underpinning

Underneath the overarching umbrella of enterprise competitiveness, this dissertation is at the crossroads of three distinct but interrelated lines of research: 1. dynamic capabilities; 2. internationalization of the business; and 3. business growth. At the heart of these three research areas we find knowledge management.

***Figure 1: Knowledge management as the convergence point of three research domains***




*Source: Own work*

Dynamic capabilities are, in essence, capabilities that allow a firm to mutate and adapt to market changes. Some researchers have identified knowledge management processes in general, and learning processes in particular, as the critical element underlying and driving dynamic capabilities (Zollo and Winter, 2002; Winter, 2003). The notion of dynamic capabilities seems to be linked with that of double-loop learning (Argyris, 1977; Argyris and Schön, 1978), as it implies a learning process which changes the values and operating assumptions of the organisation, in the same way that dynamic capabilities change the configuration of resources (Zahra and George, 2002a).

Knowledge and knowledge management capability play a central role in the gradualist approach to firm internationalization. The Uppsala model and its extensions (Johanson and Wiedersheim-Paul, 1975; Johanson and Vahlne, 1977 and 1990; Bilkey and Tesar, 1977; Cavusgil, 1980; Reid, 1981; Czinkota, 1982) describe the internationalisation of the firm as a learning process based on the accumulation of experimental foreign market knowledge (Rialp and Rialp, 2001). The International Entrepreneurship (IE) model of internationalization (Oviatt and McDougal, 1994; Knight and Cavusgil, 1996) has also put knowledge at the core of its theoretical architecture. It is the manager's prior stock of knowledge that allows the firm to correctly process information about potential markets, and develop the necessary capabilities to engage in international transactions short after starting operations. Writings on early internationalization theory suggested that the knowledge acquired through internationalization is mainly experimental and context specific, therefore difficult to articulate and transfer. Business literature emphasize that the ability to create and transfer knowledge internally is one of the main competitive advantages of multinational firms compared with their domestic counterparts (Ghoshal, 1987; Anand and Kogut, 1997). Both, the Uppsala and the IE model pay little attention to the way tacit or experimental knowledge is transformed into objective knowledge that could be stored and used throughout the firm to develop skills and capabilities. These models either assume that mechanisms exist within the firm that would allow efficient and effective transfer knowledge between the different parts of the business; or neglect their importance due to the context-specificity of experimental knowledge. Several researchers have stressed the need for additional research and a more in depth understanding of the knowledge construct. Blomstermo and Sharma (2003) as well as Eriksson *et al*. (1997) argue that there is a need for more research on the nature of knowledge and how it is shared.

The theoretical link between knowledge and growth was first established by Penrose (1959) when she argued that it is the ability to create knowledge what helps to explain the firm's ability to grow. As she put it in the foreword to the 1995 edition of her book: "*[T]he growing experience of management, its knowledge of the other resources of the firm and the potential for using them in different ways, create incentives for further expansion as the firm searches for ways of using the services of its own resources more profitably*". Central to Penrose's growth theory are the *adjustment costs of growth* and the *productive opportunity set* facing the firm. The adjustment costs of growth only affect those firms that have been able to identify and exploit a growth opportunity, and consist of the time and effort required to integrate new managers and operations, and to learn new routines when the business expands its activities. The identification and exploitation of growth opportunities is linked to managers' subjective

assessment of their productive opportunity set, which is influenced by the resources of the firm, particularly by its knowledge base. Knowledge provides firms with a platform for proactively pursuing opportunities and taking entrepreneurial actions (Sapienza *et al*., 2006; Yli-Renko *et al*., 2002). Along the same lines, the Knowledge Based View of the firm emphasizes the importance of knowledge acquisition in the enhancement of a firm's growth prospects (Grant, 1991b). Kogut and Zander (1996b) argue that "*what a firm has done before tends to predict what it can do in the future*"; and that the firm's future expansion is determined by the knowledge accumulated by it. Furthermore, Grant and Baden-Fuller (2004) believe that "*Knowledge is the overwhelmingly important productive resource in terms of market value and the primarily source of Ricardian rents*". Bessant *et al*. (2005) and Phelps *et al*. (2007) propose a framework that links together the notion that growing firms face problems and crises - tipping points (Gladwell, 2000) -, and that the firm's ability to use and process knowledge - absorptive capacity (Cohen and Levinthal, 1990) -, will determine the firm's growth path.

At each point in time, firm's existing capabilities, processes and resource endowment – *particularly knowledge* – determine the firm's growth and internationalization choices. Although a firm may expand its skills over time, in the short run, it is restricted by its current skill set, which will shape the future strategic options that its management is capable of rendering (Penrose, 1959). Furthermore, changing a firm's existing strategic approach is often perceived as costly because a new set of activities must be learned and coordinated (Greve, 2003). Managers have also been shown to depend heavily on recent strategies in order to reduce their cognitive burdens and simplify information processing (Steiner and Rain, 1989; Amburgey and Miner, 1992; Hogarth and Einhorn, 1992).

All these factors influence the manager's perceptions of risks and opportunities as well as the business' absorption capacity. According to Shane (2000), prior knowledge is the *sine qua non* of the discovery of entrepreneurial opportunities, as "*each person's idiosyncratic knowledge creates a "knowledge corridor" that allows him/her to recognise certain opportunities, but not others*". Cohen and Levinthal (1990) argue that for the business to become competitive it should develop the ability to use existing knowledge in order to recognize the value of new information, assimilate it, and apply it to create new knowledge and capabilities. It is then possible to suggest that the firm's stock of knowledge applied through the firm's capabilities to the discovery and exploitation of business opportunities also has a positive relationship with the firm's performance, and this relationship becomes stronger in firms with a strong entrepreneurial strategic orientation (Wiklund and Shepherd, 2003).

Knowledge takes two forms, *tacit knowledge* that represents all non-codified, non-articulated knowledge built through time thanks to experience and learning by doing, and *explicit knowledge* arising from manuals, textbooks, theories, etc. (Nonaka and Takeuchi, 1995). It is believed that in the case of SMEs and its managers, tacit knowledge makes up the main component of prior knowledge, particularly in the early stages of the firm's life. One could be inclined to believe that sound business decisions are based on clearly understood, well-articulated and codified knowledge, and that the predominance of tacit knowledge among SMEs would represent a serious weakness when it comes to make key strategic and operational decisions. This is not necessarily the case. Researchers have found that proper sharing of tacit knowledge within the organisation is "*the best tool for SME in enhancing competence and organisational performance which suits its needs and background*" (Ngah and Jusoff, 2009).

Independently of the selected growth and/or internationalization path or its degree of success, the business would generate a large stock of new information and increase the know-how of certain key individuals within the business. The availability of this new knowledge is a direct consequence of the business exposure to the market and the nature of the business processes. The degree to which the new information and the newly acquired individual know-how become embedded in the firm's DNA and is used to improve its effectiveness and efficiency would depend on three filtering factors: 1. the existing stock of knowledge; 2. the existing capabilities (other than knowledge management capability); and 3. the existing knowledge management capability. These three factors allow the SME to transform newly acquired information into knowledge, appropriate it, processes it, transfer it and use it throughout the organization. New knowledge could then be used to develop and/or improve capabilities that would allow the SME to better understand its clients and to design an offer that would meet the needs of its customers better than the competition. The SME's ability to transform information into knowledge, to internalize and disseminate it, and to use it to improve the effectiveness and efficiency of its processes, is in itself a dynamic capability (Nielsen, 2006). In the empirical part of this work we will analyse how these factors affect the performance of international SMEs.

Both, the stock of knowledge and the business' absorption capacity are positively correlated with the existence of knowledge management processes. One would expect that businesses that have in place well-functioning knowledge management processes, also show higher levels of absorption capacity, higher growth rates in the stock of knowledge, and greater flexibility to market changes.

Given that knowledge is used to develop, update, upgrade, deploy and discontinue processes, and given that processes are the constituent parts of dynamic capabilities, it is therefore logical to assume that knowledge management processes are key determinants of the speed and degree of capability development. In other words, that the speed of learning and the way the SME codifies, stores, disseminates and protects its knowledge, drives the speed and the nature of the SME's growth and internationalisation.

Despite the fact that knowledge management has been part of the SME research agenda for some time (Braun *et al*., 2005; Politis, 2005), careful attention to the processes and initiatives by which entrepreneurs' experiences are transformed into knowledge, and its effects on SME's capability development for growth and internationalization is lacking.

## Research questions

Based on the previous argumentation this research work will try to answer three research questions:

Research question one deals with the question of whether new capabilities are needed to succeed in international markets.

***RQ 1: Does the international business need to develop unique capabilities to succeed in international markets over and above those needed to succeed in domestic markets?***

The second research question is related to the strategic choices that the business makes *vis-à-vis* international markets.

***RQ 2: Does the existence of knowledge management capability allow the manager of an exporting SME break the path-dependency of its strategic internationalization decisions by enlarging the firm's productive opportunity set?***

The third research question is operational in nature as it aims at understanding the link between the business' knowledge management capability and other business capabilities.

***RQ 3: Does the existence of knowledge management capability facilitate the improvement of existing, and development of new, capabilities (operational or dynamic) critical for the success of the export business?***

## Research methodology

The methodology that will be used in this work is the case study methodology. This methodology, if designed and applied with scientific rigour, is suitable for analysing and solving practical business problems, as well as for building and testing new business theories. The case study methodology is qualitative in nature and it offers the opportunity to increase our understanding of business strategic decisions and the development of dynamic capabilities within the business (Helfat *et al*., 2007).

This research work will take the form of a contemporary, multiple and embedded case study based on a pre-established theoretical model that encompasses three distinctive and interrelated research areas. This methodology is characterized by the in-depth study of each participating enterprise, and is based on the methodological framework proposed by Villarreal (2007) and Villarreal and Landeta (2010).

## Contribution to the literature

This work's contributes to the business literature in three important ways. First, it designs and empirically tests the validity of a theoretical model that encompasses all areas of the SME linking strategy with operations and explaining how capabilities are built to succeed in domestic and international markets. Second, it empirically tests the impact of dynamic capabilities on strategic decisions and on management's ability to identify profitable business opportunities. Third, it explores the link between one specific dynamic capability - i.e. knowledge management – and international competitiveness by means of understanding the impact on the development and/or improvement of other capabilities.

This research work fills a gap in the literature by developing a holistic business model that provides a robust and complete description of the SME encompassing knowledge driven internationalization, knowledge management, and the development of competences and capabilities. The model is used to test the notion that domestic and international SMEs are intrinsically the same and that there is no need to develop unique capabilities to succeed in international markets. Furthermore, the model supports the notion that SMEs differ from each other because they are able to envisage different futures thanks to their capability to generate and manage knowledge, and this way they can shape their environments rather than being shaped by them.

## Dissertation structure

The remainder of this work is organized in three parts and thirteen individual chapters.

Part one is theoretical in nature and is composed of five independent but interrelated chapters: chapter one reviews the literature on enterprise competitiveness and dynamic capabilities; chapter two summarizes our understanding of firm growth and internationalization; chapter three analyses knowledge management in the context of firm internationalization and growth; chapter four briefly summarizes the gaps in the literature identified as part of the previous review of the literature and presents an in-depth analysis of each research question.

The second part presents the theoretical and empirical contributions of this work. This part is composed of seven chapters. Chapter five presents the theoretical model that will guide the analysis of empirical evidence. Chapter six articulates the purpose of the empirical research, discusses the research methodology, and presents the research protocol. Chapter seven describes the evidence gathering and analysis tools that will be use as part of the field work. Chapter eight describes the machine tool sector in Europe and the Basque Country. Chapters nine to eleven present the cases studied during the field work conducted in the Basque Country between September and December 2.014.

The third and final part of this work presents the conclusions of the research. This last part starts with a comparative analysis of the enterprises studied followed by an individual analysis of each research question in chapter twelve. Chapter thirteen is the last chapter of this work and provides the concluding remarks and some implications for future work.

# PART ONE

# CHAPTER 1: DYNAMIC CAPABILITIES AS DRIVERS OF ENTERPRISE COMPETITIVENESS

## 1.1 What is competitive advantage?

The term "sustained competitive advantage" was coined by Porter (1985) when he discussed the different competitive strategies that a firm could implement in order to differentiate itself from competitors. Despite coining the term and using it widely in his work, Porter failed to provide a conceptual definition for it, but gave a hint of what it was: "*Competitive advantage grows fundamentally out of the value a firm is able to create for its buyers that exceeds the firm's cost of creating it*". The notion that competitive advantage is somehow linked to value added was established by Porter.

Later, Barney (1991) provided his own definition of competitive advantage: "*A firm is said to have a sustained competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors and when these other firms are unable to duplicate the benefits of this strategy*". A decade later he softened that statement by saying that: "*a firm experiences competitive advantages when its actions in an industry or market create economic value and when few competing firms are engaging in similar actions*" (Barney, 2002). Bharadwaj *et al.* (1993) argue that not only by implementing a value creating strategy different from that of competitors can an enterprise achieve competitive advantage, but also through superior execution of the same strategy as competitors.

Peteraf (1993) links the notion of competitive advantage with financial performance when arguing that sustainable competitive advantage is equivalent to "*sustained above normal returns*". Along the same lines Barney (2002) links competitive advantage to firm performance when suggesting that "*a firm obtains above-normal performance when it generates greater-than-expected value from the resources it employs*". Besanko *et al.* (2000) support this view and argue in favour of bidirectional causality by saying that "w*hen a firm earns a higher rate of economic profit than the average rate of economic profit of other firms competing within the same market, the firm has a competitive advantage in that market*". The authors introduce the notion of opportunity cost into the definition of competitive advantage when they define "economic profit" as the "*difference between the profits obtained by investing resources in a particular activity, and the profits that could have been obtained by investing the same resources in the most lucrative alternative activity*".

If we are ready to accept Barney's definition of sustained competitive advantage the immediate questions that come to one's mind are: first, how high should those above-normal, greater than expected returns be?; and second, when Barney describes "value creating strategies", what does

he exactly mean by "value"? Is he referring to "value" for the shareholders, for the clients, or for a combination of all stakeholders with interests in the firm?

In an attempt to answer these questions and to operationalize the concept of competitive advantage, Kay (1993) suggested that "*the strength of* [a firm's] *competitive advantage can be measured by looking at the ratio of added value to the firm's gross or net output*". Later, Hill and Jones (1995) suggest that a company has a competitive advantage when its profit rate is above the average profit rate of its industry, where profit rate is defined as the gross profit margin of a company[1]. These attempts to measure competitive advantage make the implicit assumption that competitive advantage is a synonymous of superior relative financial performance as the key to competitive advantage resides in a strategy that increases unit price and/or reduces unit costs. Furthermore, it provides no hints as of when could a firm consider that its competitive advantage is sustainable.

Using only financial ratios to measure competitive advantage may lead to a biased and incomplete assessment. Clearly there is no competitive advantage if it is not perceived as such buy customers when they make their purchase decisions (Coyne, 1986; Bharadwaj *et al.*, 1993), so the inclusion of measures such as market share, client satisfaction and brand loyalty is needed in order to quantify competitive advantage.

The popularity of the sustained competitive advantage concept provided incentives to find linkages with other already established concepts in search of answers of how to create and maintain sustained competitive advantages. Table 1, adapted from Hoffman (2000), presents some examples of such linkages.

Despite its popularity not everyone is ready to accept the notion of competitive advantage and it has even been described by some authors as a tautological concept: "*Successful firms are successful because they have competitive advantage, which in turn cannot be defined in any other way than as a quality that brings about success*", Klein (2001).

[1] Gross Profit Margin (GPM) is calculated using the following formula: $\mathrm{GPM} = \frac{(\text{Total Revenues} - \text{Total Costs})}{\text{Total Costs}}$. The difference between the value of output and the cost of materials and intermediate inputs reflects value added, and the firm does not have non-operating income, then this ratio is similar to the one proposed by Kay (1993) as it shows value added as percentage of total costs.

***Table 1: Various strategic management concepts related to competitive advantage***

| Concept | Main authors | Relationship with sustained competitive advantage |
|---|---|---|
| Branding | Gardner and Levy (1955)<br>Aaker (1991)<br>Keller (1993, 2006) | If "*branding*" aims at differentiating one's products from competitors', then, "*brand equity*" is a potential source of sustained competitive advantage. |
| Market orientation | Kohli and Jaworski (1990)<br>Narver and Slater (1990)<br>Jaworski and Kohli (1996) Day (1994a,b); Slater and Narver (1995); Hunt and Morgan (1995, 1996) | "*Market orientation*" could be seen as an intangible resource which involves a dual focus on both customers and competitors and can contribute to sustained competitive advantage. |
| Organizational learning | Fiol and Lyles (1985); deGeus (1988); Ghoshal and Westney (1991); Glazer (1991); Day (1994a); Slater and Narver (1995) | Sustained competitive advantage lies in the ability to learn faster and to manage information better than competitors. |
| Innovation | Foxall (1984)<br>Wolfe (1994)<br>Rogers (1995)<br>Gatignon and Xuereb (1997) | Competitive advantage may result from those innovations which are consistent with the firm, both socially and technologically, and provide some distinct value to customers, either directly or indirectly |
| Customer value | Day and Fahey (1988)<br>Woodruff (1997)<br>Parasuraman (1997)<br>Slater (1997) | The leitmotif of the enterprise is customer satisfaction. Firms that provide superior customer value will achieve superior performance; therefore the provision of "*customer value*" is a source of sustained competitive advantage. |
| Relationship marketing | Morgan and Hunt (1994, 1996) | Relationship marketing is seen as a source of idiosyncratic, difficult to imitate resources. Long term relationships with clients, and the trust and commitment that it fosters, make "*relationship marketing*" rare and difficult to imitate, thus rendering it a potential source for sustained competitive advantage. |
| Business networks | Thorelli (1986)<br>Jarillo (1988)<br>Iacobucci and Hopkins (1992)<br>Anderson *et al*. (1994)<br>Achrol (1997)<br>Gulati (1998) | Networks facilitate technology transfer, informational exchange, and access to resources; it fosters trust and strengthens relationships within firms in the network. *Networks* allow for core competencies to be strengthened, resulting in sustained competitive advantage. |

*Source: Adapted from Hoffman (2000)*

It should be also mentioned that the lack of clarity about the meaning of competitive advantage has led authors to use the term in a manner that is not necessarily consistent. Porter (1985) argues that "*a firm differentiates itself from its competitors when it provides something unique that is valuable to buyers beyond simply offering a low price*". While talking about the firm, the author acknowledges that competitive advantage does not reside at the firm level but at the product level, which is where the cost and differentiation strategies could be better understood.

This way, a firm that has more than one product line could find that it has a competitive advantage over its competitors for some products while not for others. Later, Porter (1990) offers a new turn of the screw when he shifts his interest from microeconomic issues (product and firm) to more macroeconomic issues and applies the notion of competitive advantage to explain why certain regions and/or nations advance and prosper while others do not.

Over the years the term sustained competitive advantage has proven to be elusive. It clearly embraces the notion of being in a better position than competitors, and the capacity of the enterprise to maintain that position over an extended period of time. It is less clear whether the sources of competitive advantage reside inside the firm and are under the control of the manager, or on the contrary are part of the environment that conditions the firm's operations. The lack of an operational definition undermines any serious attempt to measure sustained competitive advantage and to fully understand its origins and effects on the firm and the industry. Last but not least, there is no agreed method by which one could determine whether a firm has achieved sustained competitive advantage. Box 1 presents the reader with the definition that will be used throughout this work for the concept of competitive advantage.

Research has focused not on providing an operational definition of competitive advantage, but rather on developing theories and models to address the question of where does it come from. The following short overview of these theories attempts to give the reader a broad understanding of the emergence of a competitive advantage. It should also be noted that some authors believe that the ultimate source of competitive advantage will never be identified (Collis, 1994).

***Box 1: Competitive advantage***

For the purposes of this work we will use the following definition of *competitive advantage*:

> "*Competitive advantage is the ability of a business to consistently achieve above normal rents by continuously identifying profitable business opportunities, and seizing those opportunities through the design, production, and commercialization of a unique value proposition that meet the needs of existing, emerging, and imagined future clients better than the competition, allowing it to become the preferred supplier in the market and to shape future markets.*"

The terms *competitive advantage* and *competitiveness* will be used interchangeably in this work.

## 1.2 Theories explaining competitive advantage

Different theories have attempted over the years to provide an explanation of what competitive advantage is and where it comes from. Some of those theories emphasized the importance of the environment in which business operations are conducted, some other stress the importance of the internal characteristics such as resource endowments, processes and capabilities.

Following Teece *et al.* (1997) line of reasoning one could identify three distinct paradigms that have tried to untangle the sources of competitive advantage. The first paradigm is rooted in the structure-conduct-performance paradigm of industrial organization (Mason, 1949; Bain, 1959) and was suggested by the person that coined the term in the first place, Michael Porter. This approach is usually referred to as the competitive forces and competitive strategies view (Porter, 1980 and 1985), and its main characteristic is that when explaining the sources of competitive advantage it assigns a predominant role to the industry structure in detriment of internal characteristics of the enterprise. The second paradigm was inspired by Shapiro (1989), and like Porter's approach considers that rents flow from a privileged position in the market as it views competitive advantage as originating from the firm's ability to use strategic investment, pricing strategies, signalling, and the control of information to avoid competition. Finally, the third paradigm takes a different approach and looks at competitive advantages originating from firm specific resources, such as organizational learning and capabilities. This paradigm is usually referred to as the Resource Based View (RBV) (Wernerfelt, 1984; Barney, 1991). It is commonly agreed that the dynamic capabilities approach (Teece *et al.*, 1997) originated as an extension of the RBV paradigm.

Before proceeding with a detailed account of what it has been done in terms of dynamic capabilities it is good to devote some time to further explain the salient points of the aforementioned paradigms.

### 1.2.1 Porter's competitive forces and competitive strategies

Inspired by industrial organization economics, Porter (1980) developed what is commonly known as the *Five Forces Model*. This model suggests that the main determinant of a firm's profitability is the competitive structure prevailing in the industry in which it operates. Porter identifies five forces that determine the competitive intensity and therefore attractiveness of a market. A market is said to be attractive when its overall industry profitability is high, and industry profitability is determined by the strength of each of the five forces.

Those five competitive forces are:

- *The threat of new entrants*: The strength of this force will be determined by the existence of barriers to entry such as patents or quotas, absolute cost advantages, economies of scale, strong brand equity, high sunk costs, high capital requirements, limited access to critical resources, high switching costs and high customer loyalty.
- *The bargaining power of suppliers:* The strength of this force will be determined by supplier switching costs relative to firm switching costs, supplier concentration, differentiation of inputs, existence of substitute inputs, threat of forward integration, importance of volume to supplier, etc.
- *The bargaining power of buyers*: The strength of this force will be determined by the degree of buyer concentration to firm concentration, price sensitivity, buyer volume, buyer switching costs relative to firm switching costs, buyer information availability, availability of existing substitute products, etc.
- *The threat of substitutes*: The strength of this force will be determined by the buyer's propensity to substitute, the relative price performance of substitute, buyer switching costs, perceived level of product differentiation, number of substitute products available in the market, ease of substitution, etc.
- *The rivalry among existing competitors*: The strength of this force will be determined by the levels of advertisement and promotion budgets, the industry concentration, the industry growth, the difference between different products, and the exit barriers among other things.

Given the competitive intensity in each market, Porter (1985) suggests that a company could reach above average returns (i.e. competitive advantage) by pursuing certain generic positioning strategies aimed at reducing the forces in its industry. These generic strategies are defined along two dimensions: The first dimension is *strategic scope*, a demand-side dimension that refers to the size and composition of the market the firm is targeting; the second dimension is *strategic strength*, a supply-side dimension that refers to the firm's core competencies that could be either product differentiation or product cost.

***Table 2: Porter's generic strategies***

| | | Strategic Strength | |
|---|---|---|---|
| | | Low Cost | Differentiation |
| Strategic Scope | Broad (Industry wide) | Cost Leadership Strategy | Differentiation Strategy |
| | Narrow (Market segment) | Focus Strategy (Low Cost) | Focus Strategy (Differentiation) |

*Source: Porter (1985)*

The three generic strategies identified by Porter are:

- *Cost leadership*: This is an inward looking strategy (as opposed to a strategy that centres its attention on the customer) that requires the firm to target price sensitive or cost conscious clients, and constantly maintain the lowest market prices for a given quality level in the target market segment. For this strategy to succeed the firm must ensure having at all times lower operating cost than its competitors, ant this could be achieved among other things by controlling the supply chain or by reaching a volume of production that allow the firm benefit from economies of scale. Firms following a coast leadership strategy usually have a broad strategic scope.
- *Differentiation*: This strategy places the client at the centre stage and calls for the enterprise to design a product or service with unique characteristics to the eyes of its target clients. The success or not of this strategy would depend on how fast and how well could competition copy the product or service.
- *Focus strategy*: This strategy basically implies that the firm should either aim at implementing a cost leadership or a differentiation strategy for a reduced portion of the market, a niche.

The natural conclusion of this approach is that sustained competitive advantage could be achieved by: first, an adequate selection of an industry, and then, by an appropriate positioning within that industry. Following Porter's thinking, the reason why some enterprises fail to obtain competitive advantage is because they implement a *middle-of-the-road strategy* which is neither a cost leadership nor a differentiation strategy, in other words, they get "*stuck in the middle*" in between two generic strategies.

In his early works Porter assigned equal importance to all types of strategies. Recently, in his book *The Competitive Advantage of Nations* (Porter, 1990), the author introduces a hierarchy

for the generic strategies and argues that differentiation strategies offer higher-order advantages because they are more sustainable, while a competitive advantage based on a cost leadership strategy provides lower-order advantages as they can be easily replicated by competitors. Furthermore, he suggests that competitive advantage grows primarily out of "*improvement, innovation, and change*", boosting the superiority of differentiation strategies even further.

Even though very popular and widely used, the approach also has its detractors. A major criticism of Porter's work originates in the assumptions that were needed in order to simplify the analysis and arrive to workable conclusions. Barney (1991) pointed out that the homogeneity and perfect mobility of resources within an industry is an assumption that only in very rare circumstances represents a true picture or the real world. Furthermore, the author criticized the model's lack of attention to internal sources of competitive advantage when saying that the model "*has placed little emphasis on the impact of idiosyncratic firm attributes on a firm's competitive position*". The five forces and competitive strategies framework, although useful, is static in nature and its application is possible only under stable conditions (Datta, 1997 and 1998; D'Aveni, 1994; Ghoshal and Bartlett, 1997; Hamel and Prahalad, 1994; Mintzberg, 1990; Moran and Ghoshal, 1999).

### 1.2.2 Strategic conflict

The strategic conflict approach (Shapiro, 1989) uses game-theoretic tools to solve one of the puzzles generated by Porter's approach. If one is ready to accept that the structure of the industry affects firm's performance and that there are only three possible strategies that would allow the firm to alter and improve its position in the market; then, one should ask the question of what happens when all the firms in the industry are simultaneously applying any of the three generic strategies. Porter's model fails to answer this question, and therefore it also fails to be a useful tool to make predictions about the future structure of the industry. The strategic conflict approach looks for a solution to this shortcoming.

Using game theory, Shapiro (1989) analysed the nature of competitive interactions between rival firms. As a result of his work it was possible to formalize and better understand intuitive arguments about various types of business behaviour such as *signalling*, *advertising*, *predatory pricing*, and *pre-emptive patenting*. This approach would suggest that a firm could achieve competitive advantage by using strategic investments, pricing strategies, and control of information to manipulate the market environment.

As most game theoretic models, this approach makes use only of a reduced number of variables to describe the phenomena in question, and therefore fails to represent the full complexity of the problem and to provide a fully satisfactory answer to the question. According to Sutton (1992) the models do not generate any testable predictions but only rationalize observed behaviours by specially designed game forms. Furthermore, Ghemawat (1991) argues that for many strategic moves to be possible important irreversible commitments needed to be made. Therefore, the strategy of a rival firm could be easily observed and replicated only if the firm was ready to and able to previously cover those sunk costs.

Although interesting as an approach that could be of help in the short-term to keep competitors off balance, its usefulness is questionable in an environment of rapid technological change and highly dynamic markets.

### 1.2.3 A resource-based approach

***The Resource Based View***

One of the criticisms usually made to the outward looking models previously described is their lack of attention to the internal characteristics and mechanisms affecting firm's performance. The logical consequence of this discontent was an attempt by many scholars, most notably Wernerfelt (1984) and Barney (1991), to describe how firms' achievement of competitive advantage was conditioned by internal factors. This movement gave birth to what is known as the Resource Based View (RBV) of the firm. The RBV argues that the resources and capabilities a firm possesses define the essence of the firm's strategy (Rumelt, 1984; Andersen and Kheam, 1998; Blomqvist *et al*., 2002; Jantunen *et al*., 2005; Prashantham, 2005). The foundations of the RBV can be found in the work by Penrose (1959) who conceived the firm as an administrative organization and a collection of productive resources. Recent reviews of the theoretical and empirical evolution of the RBV are Acedo *et al.* (2006), Armstrong and Shimizu (2007), Lockett *et al.* (2009), and Newbert (2007).

The central message of this approach is that idiosyncratic assets are the main factors that determine success or failure in the firm's quest for competitive advantage. Firm specific competitive advantage could be achieved when the enterprise owns or controls a combination of resources that possess certain attributes (Wernerfelt, 1984; Barney, 1991; Peteraf, 1993). The attributes that resources should meet have come to be known as the VRIN attributes, i.e. they

should be valuable (V), rare (R), inimitable (I) and non-substitutable (N), and be embedded within an appropriate organizational structure in place (Barney, 1994).

Furthermore, RBV considers that at least in the short term, resources are heterogeneous and immobile. This internal looking approach softens Porter's assumptions of resource homogeneity and immobility, and by doing so it adds realism to the model. When a firm shares the same resource bundle with other competing firms, those resources cannot be a source of competitive advantage, at best, they could be sources of competitive parity. On the other hand, if a firm possesses unique resources the condition of resource heterogeneity is met, and a firm may obtain at least a temporary competitive advantage. If firms that lack a particular resource face little or no cost in developing, acquiring, and using such resource compared to firms that already possess and use it, the condition of immobility is not meet and that resource could only be a source of temporary competitive advantage. On the other hand, if firms without that particular resource need to incur in high costs to obtain, develop, and use it compared to a firm that already possesses it, then the firm that already owns that resource can be considered to have a sustained competitive advantage (Barney, 1991). While RBV views firms in terms of bundles of resources (Rumelt, 1987), it is acknowledged that firms create competitive advantage by assembling resources that work together to create organizational capabilities (Wernerfelt, 1984; Amit and Schoemaker, 1993). Peteraf and Barney (2003) caution against overgeneralizing the theory and emphasize that it is only intended to explain performance differentials within the same industry.

***The Knowledge Based View Extension***

One important extension of the RBV is the so called *knowledge-based view* of the firm (KBV). The KBV has emerged from the RBV by focussing on intangible resources rather than on physical assets. The KBV rests on the notion that the firm's strength resides in the integration of knowledge and the belief that knowledge is the firm's most important resource (Grant, 1996a and 1996b; Grant and Baden-Fuller, 2004). It is because of this that proponents of the KBV reconceptualise a firm as a repository of knowledge and heterogeneous knowledge bases across firms are the main determinants of performance differences (DeCarolis and Deeds, 1999; Wiklund and Shepherd, 2003).

Kogut and Zander (1996a) see knowledge as consisting of *know-how* (procedural knowledge) and *information* (declarative knowledge). By *information* the authors understand the "*knowledge that can be transmitted without loss of integrity once the syntactical roles required*

*for deciphering it are known. Information includes facts, axiomatic propositions, and symbols*" (Kogut and Zander, 1992). *Know-how*, which is considered by Grant (1996a and 1996b) as the source of sustainable advantage due to its firm specificity and relative immobility, is defined as "*the accumulated practical skill or experience that allows one to do something smoothly and efficiently*" (Kogut and Zander, 1992).

The static view of KBV is challenged by Kogut and Zander (1992, 1993, and 1996a) who see the firm as a complex system of knowledge emergence and application, and propose a dynamic approach. The authors argue that firms learn new skills by recombining knowledge on the basis of their existing capabilities and organizing principles. Specifically, they use the term *combinative capabilities* to describe organizational processes by which firms synthesize and generate new applications from their current know-how. According to the authors, a firm's knowledge evolves in a path dependent way, through the replication and recombination of existing knowledge. Ultimately, it is the ability to replicate knowledge which bounds the growth of a firm.

One criticism made to the knowledge based vies of the firm is that is primarily focused on the role of firms in providing efficient knowledge exchange rather than their role in efficiently producing knowledge or capabilities (Nickerson and Zenger, 2004).

***Criticisms to the Resource Based Approach***

Despite receiving a warm welcome, this approach also has its critics. Kraaijenbrink *et al.* (2010) provide an interesting analysis and categorization of critiques to RBV. One of the most common critiques is that RBV lacks managerial implications (Priem and Butler, 2001a) as it provides no hints of how the underlying mechanisms that make resources the source of competitive advantage work, of how to develop VRIN resources (Connor, 2002; Miller, 2003), and fails to recognize that some resources are outside the control of the managers (McGuinness and Morgan, 2000). A closely related critique is the one that claims that RBV has limited applicability. This critique is based on various argument, first due to the impossibility of generalizing on the bases of resource uniqueness (Gibbert, 2006a and 2006b), second on the claim that RBV applies only to large enterprises with large market share and the capability of altering their resource base (Connor, 2002), and third, on the basis that in order to obtain VRIN resources, which by definition are difficult to get, the enterprise should already have some VRIN resources that facilitate the acquisition of new resources (Miller, 2003).

Another critique says that VRIN is neither necessary nor sufficient for sustained competitive advantage. It has been noted that possessing VRIN resources by itself, without the capability to deploy them, is not sufficient to ensure the achievement of competitive advantage (Makadok, 2001; Peteraf and Barney, 2003). Some authors have argued that the RBV is tautological (Lockett *et al.*, 2009; Priem and Butler, 2001a and 2001b) as it is claimed that the possession of VRIN resources could give rise to competitive advantage, and the condition for a resource to be VRIN is that it leads to competitive advantage.

As it occurs in other disciplines and areas within strategic management, the term "resource" does not seem to find a unanimous and undisputed definition. RBV writings have not always used a consistent definition for resources, and in some cases the definitions used seem to be too broad including assets, knowledge, processes, capabilities and firm attributes that enable the firm to conceive and implement strategies efficiently and effectively (Barney, 1991; Foss, 1997a; Priem and Butler, 2001a). This excessive broadness in the definition fails to distinguish between the resources that serve as inputs for the enterprise's operations, and the necessary capabilities that serve to select, deploy, and organize those resources (Dierickx and Cool, 1989; Amit and Schoemaker, 1993). Table 3 provides a succinct summary of some of the most important approaches *vis-à-vis* the definition and classification of resources, and Box 2 provides the definition and classification of resources that will be used throughout this work.

It has also been argued that while the RBV recognises the fact that resources are complementary, it does not elaborate on the effects of such complementarily on firm's performance and on the duplicability of resource interactions. Collis and Montgomery (1995) noticed that whereas individual resources could be duplicated across firms, it is far more difficult to duplicate the resource configurations of technologies, infrastructures, business processes, and the related synergies among them.

Finally, another critique to RBV has noted that this approach provides no valuable insights on how to achieve sustained competitive advantage if the firm is operating in fast changing environments and the "rules of the game" change (Eisenhardt and Martin, 2000; Barney, 2002).

Recent reviews (Armstrong and Shimizu, 2007; Newbert, 2007) have stressed that empirical research has generated only modest support to RVB, implying other factors must be considered when explaining sustained competitive advantage. In response to these findings and the aforementioned criticisms and limitations, scholars have recently shifted their focus to include the dynamic view of resources and capabilities.

***Table 3: Definitions and classification schemes for resources***

| Authors | Definitions and classification of resources |
|---|---|
| Hofer and Schendel (1978) | The authors classified resources as: *financial resources* (e.g. cash flow, debt capacity, new equity availability); *physical resources* (e.g. plant and equipment, inventories); *human resources* (e.g. scientists, production supervisors, and sales personnel); *organizational resources* (e.g. quality control systems, corporate culture, relationships) and; *technological capabilities* (e.g. high quality production, low cost plants).<br>Grant (1991b) added *reputation*, understood as "*the knowledge and emotions held by individuals about a product range*" to Hofer and Schendel (1978) list. |
| Wernerfelt (1984) | "*By a resource is meant anything which could be thought of as strength or weakness of a given firm. More formally, a firm's resources at a given time could be defined as those (tangible and intangible) assets which are tied semi-permanently to the firm.*" |
| Barney (1991 and 1995) | "*All assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm to conceive of and implement strategies that improve its efficiency and effectiveness*" (Definition taken from Draft (1983)).<br>The author distinguishes three types of resources (Barney, 1991): *physical capital resources* (e.g. physical technology, plant and equipment, geographic location, access to raw material), *human capital resources* (e.g. training, experience, judgement, intelligence, relationships, and insight of individual managers and workers in a firm), and *organizational capital resources* (e.g. formal reporting structure, formal and informal planning, controlling and coordinating systems, informal relations among groups). Later, Barney (1995) added one more resource category, *financial capital resource* (e.g. debt, equity, and retained earnings). |
| Grant (1991a) | Anything tangible or intangible that the firm can use in its processes for creating, producing, and/or offering its products (goods or services) to a market.<br>Contrary to Barney, the author distinguishes resources from capabilities and processes, and categorizes resources into *tangible* (e.g. financial capital and physical assets of the firm, such as plant, equipment, and raw materials), *intangible* (e.g. reputation, brand image, and product quality), and *personnel-based resources* (e.g. technical know-how and other knowledge assets including dimensions such as organizational culture, employee training, loyalty, teamwork, etc.).<br>Tangible resources could be relatively easy to duplicate by competitors, intangible resources on the other hand are more difficult to duplicate therefore have higher chances to become the source of competitive advantage (Dierickx and Cool, 1989), finally, personnel-based resources are firm specific and developed over time (Amit and Schoemaker, 1993; Prahalad and Hamel, 1990), thus are extremely difficult to copy by competing firms. |
| Teece *et al.* (1997) | "*Resources are firm-specific assets that are difficult if not impossible to imitate. Trade secrets and certain specialized production facilities and engineering experience are examples. Such assets are difficult to transfer among firms because of transactions costs and transfer costs, and because the assets may contain tacit knowledge.*"<br>According to the author, "resources" are different from "factors of production" as the later are "*undifferentiated inputs available in disaggregate form in factor markets. By undifferentiated we mean that they lack a firm-specific component. Land, unskilled labor, and capital are typical examples. Some factors may be available for the taking, such as public knowledge.*" |
| Shapiro (1999) | Resources can be grouped into *physical*, *human*, *financial, organizational, information technology, marketing resources,* and *legal resources* (e.g. patents and contracts).<br>Mosakowski (1999) and Alvarez and Busenitz (2001) suggested that a new category of *entrepreneurial resources* should also be added to the list; where *entrepreneurial ability* refers to "the capacity to identify, develop, and complete new combinations of existing asset bundles or new asset configurations" (Godfrey and Gregersen (1999)). |
| Helfat and Peteraf (2003) | "*A resource refers to an asset or input to production (tangible or intangible) that an organization owns, controls, or has access to on a semi-permanent basis.*" |

*Source: Own work*

***Box 2: Resources***

For the purposes of this work, and in order to avoid confusion, whenever referring to resources and when not citing other researchers' work Helfat and Peteraf (2003) definition of resources will be used:

> *"A resource refers to an asset or input to production (tangible or intangible) that an organization owns, controls, or has access to on a semi-permanent basis."*

This work follows Longnecker *et al*. (2010) and considers that resources defer from capabilities in that the former require firm capabilities for them to be integrated with the aim of strengthening a firm's ability to compete.

Furthermore, the following classification for resources is proposed:

a) Knowledge (including information);
b) Human resources;
c) Financial assets;
d) Physical assets, infrastructure and technology;
e) Networks and relationships;
f) Non-physical assets (e.g. patents, trade secrets, brand name, reputation, etc.).

However important resources are, there is a growing recognition that resources alone do not create value (Ashurst et al., 2008). Rather, value is created by the business' ability to manage and organize its resources to achieve a desired outcome (Ashurst et al., 2008; Amit and Schoemaker, 1993). Consequently, it could be said that the only way business could achieve sustainable competitive advantage is by having the ability to assemble a set of capabilities that can be consistently applied to create value for the firm (Teece and Pisano, 1994; Markides and Williamson, 1996; Newbert, 2007) and that competitors find difficult to imitate (Barney, 1991 and 2007; Prahalad and Hamel, 1990). This prompted the development of the dynamic capabilities concept.

### 1.2.4 Dynamic capabilities

The dynamic capabilities (DC) approach emerged in the 1990s as an attempt to fill the gaps left by the RBV. A firm's resource endowment plays a critical role in the formation of capabilities because resource commitments enable the execution of the organization's capabilities (Amit and Schoemaker, 1993). The RBV assumes the existence of heterogeneous and immobile resources and capabilities, and it does not address the question about the origin, development

and evolution of such resources and capabilities. The DC approach offers an explanation for this.

The DC approach is currently the preferred conceptual framework used to explain competitive advantage in markets characterized by high-velocity (i.e. increasing global competition and shorter product life-cycles and rapid technological changes). Competitive advantage depends on the firm's ability to evolve through the creation of new bundles of resources and the "*development of management capabilities, and difficult-to-imitate combinations of organizational, functional and technological skills*" (Teece *et al.*, 1997). The emergence of dynamic capabilities has strengthened and completed the RBV by addressing the evolutionary nature of firm resources and capabilities in relation to environmental changes, and it has addressed two key aspects that were missing in the RBV approach, the notion of market dynamics, and the articulation and transformation of resources into capabilities.

Teece *et al.* (1997) are considered to be the founding fathers of this approach, and they explain that "*the term "dynamic" refers to the capacity to renew competences so as to achieve congruence with changing environment."*, while *"the term "capabilities" emphasizes the key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment.*".

The DC approach claims that competitive advantage originates from the creative integration, transformation and subsequent exploitation of resources and capabilities (Teece *et al.*, 1997; Teece, 2007), and the firm's ability to integrate different resources to form strong organizational capabilities (Grant, 1996a; Verona and Ravasi, 2003; Zollo and Winter, 2002). It parallels the ideas of Schumpeterian competition, where competitive advantage is based on creative destruction of existing resources and novel combinations of new functional competences (Schumpeter, 1942).

It has been said before it could be argued that the determinants of short term and long term competitive advantage reside in different "parts" of the business. While short term competitive advantage could be achieved by securing access to VRIN resources and by ensuring effectiveness and efficiency in business processes; long term, or sustained, competitive advantage could only be achieved by ensuring access to the information and knowledge needed to adapt, and to properly develop the firm's dynamic capabilities.

As it could not be otherwise, the DC approach has been received with a combination of hope and criticisms. On the positive side, the approach has been seen as a potentially integrative tool to explain the sources of competitive advantage (Leonard-Barton, 1992; Teece and Pisano, 1994; Iansiti and Clark, 1994; Bierly and Chakrabarti, 1996; Petroni, 1998; Tripsas, 1997; Helfat, 1997; Eisenhardt and Martin, 2000; Luo, 2000; Zollo and Winter, 2002; Blyler and Coff, 2003; Zott, 2003; Helfat and Peteraf, 2003; Sanchez, 2004; Dutta *et al*., 2003; Ethiraj *et al.*, 2005). On the negative side, it has been repeatedly "*called conceptually vague and tautological, with inattention to the mechanisms by which resources actually contribute to competitive advantage*" (Eisenhardt and Martin, 2000). Authors like Zahra *et al*. (2006) pointed out that "*researchers have tended to identify dynamic capabilities post hoc, inferring their existence from successful organizational outcomes such as profitability and growth*".

***Table 4: Determinants of short and long term competitive advantage***

| | RESOURCES | PROCESSES |
|---|---|---|
| Sources of **Short Term** Competitive Advantage | Ownership and control of any or a combination of **VRIN resources**. | Effectiveness and efficiency in developing adequate **operational and administrative business processes** that ensure the offer has the right characteristics and that business transactions are conducted in line with the business strategy. |
| Sources of **Long Term** Competitive Advantage | Ownership, control and preferential access to **information and knowledge**.<br><br>Ownership, control and preferential access to **human resources** and **networks/relationships** (*because of their capacity to facilitate access to information and knowledge*). | Effectiveness and efficiency in developing processes that ensures **access**, **process** and **appropriation of information** resources.<br><br>Effective and efficiently development of **strategic design**, **planning** and **implementation** processes.<br><br>Effective and efficient development of enterprise **change and adaptation** processes. |

*Source: Own work*

As Easterby-Smith and Prieto (2008) point out, despite unavoidable disagreements, the literature has reached certain consensus regarding dynamic capabilities. First, there is a distinction between dynamic capabilities and operational capabilities, with changes in the latter being the visible outcome of the former as they connote change and evolution (Winter, 2003). Second, a capability is the potential to do certain things, not the things that are done (Dougherty *et al*., 2004). Third, dynamic capabilities reside in the potential to change resources, routines, and competences. Fourth, dynamic capabilities are constituted of routines rather than

resources themselves (Zollo and Winter, 2002). Fifth, the process of learning may be a central element in the creation and renewal of dynamic capabilities, therefore an understanding of the processes by which firms learn is critical to understanding dynamic capabilities (Mahoney, 1995; Zollo and Winter, 2002).

In the following section we will deepen our understanding of the DC concept and how it could be used to understand the firm's quest for competitive advantage.

## 1.3 Business capabilities

### 1.3.1 What is a capability?

A central theme in organizational and entrepreneurial studies concerns the ability of firms to respond to changes in the business environment through endogenous strategic and structural adaptation by developing and deploying capabilities (Gavetti, 2005; Levinthal, 2000; McMullen and Shepherd, 2006). The strategic management literature makes extensive use of concepts such as routines, processes, competencies and capabilities but in most cases fails to be rigorous in its use.

There is no clear and widely accepted definition of capability, nor is the difference between capability and dynamic capability clear in the literature. Three widely cited definitions of capability are the ones provided by Winter (2003): "*An organizational capability is a high level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization's management a set of decision options for producing significant outputs of a particular type*"; Helfat and Peteraf (2003): "*An organizational capability refers to the ability of an organization to perform a coordinated set of tasks, utilizing organizational resources, for the purpose of achieving a particular end result*"; and Teece *et al*. (1997): "*capabilities are complex bundles of skills and accumulated knowledge, exercised through organizational processes that enable firms to coordinate activities and make use of their assets*".

Other authors have defined capability as "*ability*" (Silverman, 2002), "*potential ability to accomplish*" (Learned *et al.*, 1969), "*set of business processes*" (Stalk *et al.*, 1992), "s*ocially complex routines*" (Collis, 1994; Winter, 2000), "*ability to act and grow*" (Lenz, 1980), "*integrative processes by which skills and knowledge are combined with tangible resources to transform ... inputs to outputs*" (Day, 1993), "*a set of business processes strategically understood*" (Stalk *et al*., 1992), and "*capacity to deploy resources*" (Amit and Schoemaker, 1993). Some authors even consider capabilities as resources when they are not transferable

among enterprises and its organizational embeddedness and path dependencies make them hard to replicate (Barney, 1991).

The notion of capabilities was first suggested by Penrose (1959), who proposed the idea that resources are composed of a bundle of productive services that are offered to the enterprise and that affect the firm's development of ideas, experience and knowledge. Nelson and Winter (1982) took this idea further when suggesting that the firm is nothing but bundles of path-dependent knowledge which accumulates over time. Firms' knowledge accumulates over time thanks to experience and on the job learning, and is embedded in bundles of routines (Ethiraj *et al.*, 2005). The interaction and organization of individual and organizational routines (Cyert and March, 1963; Simon, 1997; Chandler, 1992) leads to the creation of organizational processes. Following this reasoning, one could think of organizational processes as complex sequences of routines. When different processes are combined towards the achievement of a specific functional purpose they lead to the development of specific organizational capabilities.

Hence, it could be said that a cumulative sequence exist. This cumulative sequence starts when a bundle of individual knowledge and skills are applied to achieve a specific practical purpose, and in doing so it consumes resources in a unique manner. This gives rise to routines. The combination of various routines for a common purpose generates processes. A group of processes aimed at one specific organizational goal give rise to a capability; a set of capabilities give rise to a business competence (Knight and Kim, 2009).

***Figure 2: Sequence of capability and competence development***


Source: Own work

It should be understood that processes are not always deployed as part of a planned sequence of actions aimed at the development or deployment of a capability (Autio *et al*., 2011). Firms often develop capabilities accidentally or without a logical sequence of previously planned actions (George, 2005). This is particularly true in international contexts where uncertainty is usually high.

Capabilities are process-oriented and represent a structure that needs to be in place and is used to convert input into output. Capabilities refer to an organization's ability to assemble, integrate, and deploy valued resources in order to create an offer for the client (Amit and Schoemaker, 1993; Russo and Fouts, 1997; Schendel, 1994). A corollary of this logic is that while resources are available to all firms, the capability to assemble, integrate, and deploy them effectively is heterogeneously distributed.

When it comes to finding a commonly agreed definition for capabilities we face the same problem as in the case of resources. Box 3 provides the definition of capability that will be used throughout this work.

***Box 3: Capability***

For the purposes of this work we will use Autio *et al*. (2011) definition of capability:

> *"A capability is a combination or sequence of processes and its enabling resource commitments that have the potential to reliably achieve outputs congruent with functional objectives and the goal of the business."*

In chapter four the reader will find an identification of all the capabilities that the business should put in place in otder to competitive advantage.

Based on the previous definition it is clear that the firm could potentially have to develop a large number of capabilities, depending on its size and level of complexity. It is also clear that several capabilities could be simultaneously developed and deployed towards the development of the same competency or the achievement of the same organizational goal.

### 1.3.2 Capabilities' constituent parts

If we are hoping to understand what capabilities are, we need to have a thorough understanding of its constituent parts (i.e. resources, routines, and processes). In what follows I will discuss in greater detail these parts. Given that we have already commented the RBV and we clarified how we are going to use the term *resource* in this work, we will proceed with the remaining parts.

### 1.3.2.1 Routines

Nelson and Winter (1982) suggested that if we want to understand how the economy changes, we should look into the routines as they would be the unit of analysis of an evolutionary perspective on the economy. Routines are seen as the equivalent of the gene in the social realm. In that sense, the authors argued that routines have gene-like stability (inheritance), the capacity to "mutate" (variation), and to be the object of choice and selection. Thus, routines seem to cover all aspects of evolution and serve as memories for the organizations that embody them.

Routines are often seen as patterns, and this notion is present in the definitions provided by many authors. Table 5 lists some alternative definitions of routines, and Box 4 presents the definition that will be used throughout this work.

***Table 5: Alternative definitions of routines***

| Author | Definitions of Routines |
|---|---|
| Winter (1964) | "*pattern of behaviour that is followed repeatedly, but is subject to change if conditions change*" |
| Cohen and Bacdayan (1994) | "*patterned sequences of learned behavior involving multiple actors who are linked by relations of communication and/or authority*" |
| Pentland and Rueter (1994) | "*the set of possible performances for a particular task*" or "*ordered sets of actions*" |
| Cohen *et al*. (1996) | "*... an executable capability for repeated performance in some context that has been learned by an organization in response to selective pressures.*" |
| Winter (2003) | "*behavior that is learned, highly patterned, repetitious or quasi-repetitious, founded in part in tacit knowledge*" |
| Becker (2004) | "*they are patterns, repetitive and persistent, collective, non-deliberative and self-actuating, of processual nature, context-dependent, embedded, and specific, and path dependent*." |

*Source: Own work*

***Box 4: Routine***

Becker (2004) has probably presented what is today the most complete review of the work undertaken on routines. For the purposes of this work we will adapt Becker's (2004) definition of routine and we will stick to it whenever we refer to routines, except when we are citing other authors.

> *"Routines are repetitive and persistent, collective, non-deliberative and self-actuating, of processual nature, context-dependent, embedded, specific, and path dependent, patterns of behaviour that consume, and potentially also generate, resources while being performed."*

An aspect that is somehow closely associated with the notion of routines as patterns is the fact that nowadays it is agreed that routines are path-dependent (David, 1997), that they are shaped by history (Nelson and Winter, 1982; Levitt and March, 1988; North, 1990; Barney, 1991; Bourdieu, 1992; Dosi *et al.*, 1992; March, 1994; Nelson, 1994; Malerba and Orsenigo, 1996; Foss, 1997b; Madhok, 1997; Oliver, 1997; Teece *et al.*, 1997; Coriat and Dosi, 1998; Amit and Belcourt, 1999), and that their development over time is a function of their starting point (Dosi *et al.*, 1992). It is because of all these that it is possible to say that routines go through an incremental adaptation process in response to feedback and changes in the environment (Levitt and March, 1988; Cohen *et al.*, 1996).

Furthermore, empirical studies support the idea that routines are not individual but rather collective phenomena (Weick, 1990; Cohen and Bacdayan, 1994; Pentland and Rueter, 1994; Jones and Craven, 2001; Edmondson *et al.*, 2001). Weick (1990) shows that this characteristic may have a profound impact on the way routines are performed, as any routine could be disrupted when participants start "*acting in a manner that is more individual than collective*".

#### 1.3.2.2 Processes

A statement of Teece *et al*. (1997) on the importance of firm processes helps to put this section in context: "*organizational processes, shaped by the firm's asset positions and moulded by its evolutionary and co-evolutionary paths, explain the essence of the firm's dynamic capabilities and its competitive advantage*". Additionally, Stalk *et al*. (1992) argue that "*the building blocks of corporate strategy are not products and markets but business processes*" and that "*competitive success depends on transforming a company's key processes into strategic capabilities that consistently provide superior value to the customer*".

Garvin (1998) is, to the best of my knowledge, the best attempt to provide a comprehensive typology of processes with a clear explanation of the linkages among them. The author defines processes as "*collections of tasks and activities that together – and only together – transform inputs into outputs*". Garvin's work falls short of providing a collectively exhaustive and mutually exclusive list of business process, but it is a very good starting point to understand the role of processes within an organization. The only drawback of Gravin's analysis is that when listing organizational processes, the author mixes formal processes with informal behavioural patterns.

Formal processes include *work processes* and *change processes*. Work processes are further classified into *operational processes* in charge of producing goods and services for external

customers, and *administrative processes* that generate information and plan its internal use. These processes have in common that they both involve sequences of linked, interdependent activities that together transform inputs into outputs, both have beginnings and ends, with boundaries that can be defined with reasonable precision and minimal overlap, and both have customers, who may be internal or external to the organization.

*Change processes* describe how individuals, groups, and organizations adapt, develop, and grow. All change processes are longitudinal and dynamic by definition; they are designed to capture action as they unfold, and as Van de Ven (1992) points out three components always present: "*a set of starting conditions, a functional end-point, and an emergent process of change*". These types of processes could be categorized as "*autonomous*", when they have a life of their own and proceed due to internal dynamics, and "*induced*" when they are planned and unfold in a predictable manner.

As Autio *et al*. (2011) argue, processes by themselves do not constitute capabilities, and management need to have *cognitive maps* "*to aid decision making on which process to deploy when and in what sequence*". Cognitive maps allow for variations of the subset of routines that comprise each individual process (Barr *et at*., 1992; Bogner and Barr, 2000). Therefore, it is possible to say that enterprises have a repertoire of processes, that do not necessarily are used all at the same time or in the same sequence, and still be the constituent elements of a capability; as well as a comprehension or belief about which processes can be effectively deployed to attain a desired result.

***Box 5: Process***

For the purposes of this work we will adapt Garvin's (1998) definition of process and we will stick to it whenever we refer to a process, except when we are citing other authors.

> *"A process is a collection of routines that together – and only together – transform inputs into outputs using the resources of the business."*

Furthermore, we will classify processes into three groups:

1. *Functional processes*: They consist of processes that create, produce, sale, and deliver products and services that customers want;
2. *Administrative processes*: They refer to processes that do not produce outputs that customers want, but that are still necessary for running the business. They are related to the planning, acquisition, allocation, and monitoring of resources.
3. *Strategic management processes*: They refer to processes aimed at designing and planning a strategy for the business, as well as decision making processes, and medium to long term change processes.

### 1.3.2.3 Competences

As mentioned earlier, there is a lack of precision in the usage of terms and concepts, two particularly difficult concepts to distinguish are those of competence and a capability. From a purely linguistic point of view The Oxford English Dictionary defines competence as "*the ability to do something successfully or efficiently*", which does not differ substantially from the definition it gives for capability: "*the power or ability to do something*". The business literature defines competence in multiple ways, and in some cases it is not clear whether the authors are referring to a competence, to a capability or to a process.

Prahalad and Hamel (1990) suggested that a company has only a few core competencies and define those (core) competences as "*the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies*". Grant (1996a) suggests that an organizational competence is "*a firm's ability to perform repeatedly a productive task which relates either directly or indirectly to a firm's capacity for creating value through effecting the transformation of inputs to outputs*". According to O'Driscoll *et al*. (2000), competence refers to "*a skill, expertise or capability that a manager, a group of managers, or an organization, possess of relevance to the management and development of the organization*".

Coates and McDermott (2002) define competence as: "*a bundle of aptitudes, skills, and technologies that the firm performs better than its competitors*". Following Wu *et al*. (2007) we could say that competences reflect the knowledge-intensive, performance-enhancing business activities in which the firm has become particularly skilled. Therefore the firm' competences reflect its ability to perform repeatedly productive tasks that create value via the transformation of inputs into outputs (Nelson and Winter, 1982; Teece *et al*., 1997). When studying the competences needed for internationalization, Knight and Kim (2009) argued that competences concern tacit aspects of the firm such as resources, culture, routines, and processes.

***Box 6: Competence***

For the purposes of this work we will view competences not as a constituent part of capabilities, but rather as the result of a combination of capabilities grouped with the objective of achieving a specific core result for the firm. Adapting McGrath and MacMillan (2006) we will provide an operational definition of competence as:

> *"The degree to which the business can reliably meet or exceed objectives of each of its constituent functions for the achievement of the business' goal."*

Furthermore, in chapter four we will propose a structure of a business composed of four independent but interrelated functions:

1. *Strategy design and planning function* that identifies where the business should go and defines a plan to reach the objective;
2. *Production function* in charge of producing the offer;
3. *Marketing function* in charge of finding and keeping markets, and
4. *Resource management function* in charge of ensuring that all other functions have the necessary resources at the required time, with the required characteristics, and in the required quantities.

### 1.3.3 Classification of capabilities

Some authors have attempted to provide a meaningful and workable classification and hierarchy of capabilities, but despite the efforts not much progress has been achieved. In the words of Zahra *et al*. (2006): "*the literature on the distinction between dynamic and substantive capabilities is in its infancy*". Among the authors that have addressed this issue we could mention Collis (1994), Winter (2003), and Zahra *et al*. (2006). In this section we will briefly review in a chronological manner their contribution in this front.

Collis (1994) was the pioneer in this front; he introduced a three-level hierarchy of organizational capabilities, describing three categories of capabilities. The first group of capabilities, *first order*, refer to those capabilities needed to conduct the firm's usual business operations, or in Colli's words they refer to the "*ability to perform the basic functional activities of the firm*". The second group of capabilities, those related to *dynamics*, could be split in two sub-groups. First there are those that refer to the processes required for improving existing organizational activities, or using a terminology closer to the dynamic capabilities domain, they refer to the ability "*to learn, adapt, change and renew over time*". Secondly, we could find those capabilities that allow the enterprise "*to recognize the intrinsic value of other resources or to develop novel strategies before competitors*". Finally, the third group of capabilities, the *meta-capabilities* as Collis calls them, refer to the capabilities that enable the firm to learn to learn.

Winter (2003) classifies capabilities in "*zero level capabilities*", "*first level capabilities*" and "*second level capabilities*". *Zero level capabilities* are capabilities that allow the firm to "*earn a living*", and represent the firm's ability to produce an offer (tangible or intangible) for the client. Winter (2000) offers a similar definition: "'*a high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization's management a set of decision options for producing significant outputs of a particular type*". *First level capabilities* are those capabilities that change the product, the production process, the scale or the customers (markets) served. *Second level capabilities* are those that create and modify zero and first level capabilities.

Building on Winter (2000) and Teece *et al.* (1997), Helfat and Peteraf (2003) classified capabilities as "*operational*" or "*dynamic*". Operational capabilities make use of a collection of routines to produce a good or a service, while dynamic capabilities are used to build, integrate, or reconfigure operational capabilities. Unlike operational capabilities, dynamic capabilities contribute only indirectly to the production of the firm's offer, but like operational capabilities, they consist of a collection of routines.

Zahra *et al*. (2006) also entered the discussion of different capability levels when splitting capabilities into two types: "*substantive capabilities*" that refer to a "*set of abilities and resources that go into solving a problem or achieving an outcome",* and "*dynamic capabilities*" that are those that "*change or re-configure existing substantive capabilities*".

***Table 6: Classification of capabilities***

| Collis (1994) | Winter (2003) | Helfat and Peteraf (2003) | Zahra *et al*. (2006) |
|---|---|---|---|
| Meta-capabilities | Second Level | Dynamic | Dynamic |
| Dynamic | First Level | | |
| First Order | Zero Level | Operational | Substantive |

*Source: Own work*

To sum up, it could be said that there are at least two types, but possibly three types, of capabilities. The operative core of organizations can be conceptualized as being based on *first order* (Collis, 1994), *zero-level* (Winter, 2003), *operational* (Helfat and Peteraf, 2003) or *substantive* (Zahra *et al*., 2006) capabilities. These capabilities are the foundation of the firm's business (e.g. they encompass processes related to production and marketing). But these operational capabilities cannot remain unchanged over time. Those capabilities whose *raison d'être* is to develop modifications of operative routines are considered *first level capabilities*. In Amit and Schoemaker (1993) words, these capabilities are regarded as "*repeated process or product innovations, manufacturing flexibility, responsiveness to market trends, and short development cycles*". These capabilities would be usually associated to routines aimed at reengineering, restructuring, post-merger integration, and R&D. Finally, on a higher level of complexity, the creative or entrepreneurial level, we could find capabilities related to the firm's ability to develop novel strategies faster than competitors and introduce modifications in existing *first order capabilities* or create new ones (Collis, 1994; Zollo and Winter, 2002; Winter, 2003). These capabilities are *second level capabilities*. This distinction between first and second level capabilities seems not to be shared by a majority of the research community.

### 1.3.4 What is a dynamic capability?

It could be said that capability refers to the firm's expertise in accomplishing a specific task or group of tasks related to its core business (i.e. production and marketing of products and/or services), while a dynamic capability refers to the ability of building or modifying an existing capability. Dynamic capabilities are therefore responses to the need for change or to identify new business opportunities. Change can take many forms within an enterprise: it could refer to the transformation of organizational processes, the allocation of resources, the development and transfer of knowledge, and a change in the way the firm conducts its operations (Easterby-Smith *et al*., 2009).

***Box 7: Dynamic capability***

For the purposes of this work we have decided to create and adopt the following definition of dynamic capability:

> *"Dynamic capabilities encompass a firm's collective ability to create sustainable competitive advantage by developing, maintaining and renewing the processes and resource endowment that are the foundations of its operational capabilities, as well as the ability to define a path for the future evolution of the firm in terms of markets to target and offers for those markets. Like operational capabilities, dynamic capabilities consist of identifiable formal or informal processes that consume and generate resources while being performed."*
>
> *"A dynamic capability is a combination or sequence of processes and its enabling resource commitments that enable the busienss to develop, maintain and/or renew its business processes and capabilities."*

Taking this understanding of dynamic capabilities as our starting point, it is nonetheless important that we review the most cited definitions of dynamic capabilities (in chronological order) as the concept seems not to be univocal. Table 7 summarizes those contributions.

***Table 7: Definitions of dynamic capabilities***

| Author | Definitions of dynamic capability |
|---|---|
| Collis (1994) | The capability to develop the capability to innovate faster (or better), and so on. |
| Helfat (1997) | The subset of competences/capabilities which allows the firm to create new products and processes and respond to changing market circumstances. |
| Teece *et al*. (1997) | "*The firm's ability to integrate, builds, and reconfigures internal and external competences to address rapidly changing environments. Dynamic capabilities thus reflect an organization's ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions*"<br>Zollo and Winter (2002) criticize this definition as it does not clarify where the capabilities come from, and seems to require the presence of a rapidly changing environment as a prerequisite for the existence of dynamic capabilities. |
| Eisenhardt and Martin (2000) | "*The firm's processes that use resources – specifically the processes to integrate, reconfigure, gain and release resources – to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die*"<br>The authors suggest that there are different types of dynamic capabilities:<br>a. Dynamic capabilities that integrate resources (e.g. product development routines that combine different sources of expertise);<br>b. Dynamic capabilities that reconfigure resource endowments (e.g. transferring processes including routines for replication and knowledge brokering);<br>c. Dynamic capabilities that allocate resources;<br>d. Dynamic capabilities that ensure business process realignment;<br>e. Dynamic capabilities that gain and release resources (e.g. knowledge creation routines, alliance and acquisition routines that bring new resources into the firm from external resources);<br>f. Dynamic capabilities that eliminate resource combinations no longer providing value to the firm. |
| Griffith and Harvey (2001) | Creation of difficult to imitate combinations of resources, including effective coordination of inter-organizational relationships on a global basis that provide a firm competitive advantage. |
| Lee *et al*. (2002) | A newer source of competitive advantage in conceptualising how firms are able to cope with environmental changes. |
| Zahra and George (2002a) | Change oriented capabilities that redeploy and reconfigure resource base to meet evolving customer demands and competitor strategies. |

*Source: Own work*

***Table 7: Definitions of dynamic capabilities (Cont.)***

| Author | Definitions of dynamic capability |
|---|---|
| Zollo and Winter (2002) | "*learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness*"<br>This definition uses the words "systematically" and "learned and stable pattern" to highlight the point that dynamic capabilities are structured and persistent. Also, this definition avoids the near-tautology of defining capability as ability, and it identifies operating routines, as opposed to the more generic "competencies", as the object on which dynamic capabilities operate. |
| Winter (2003) | Capabilities that "*operate to extend, modify or create ordinary capabilities*". |
| Helfat and Peteraf (2003) | Dynamic capabilities involve adaptation and change, because they build, integrate, or reconfigure other resources and capabilities. |
| Macpherson *et al*. (2004) | Dynamic capabilities refer to the ability of managers to create innovative responses to a changing business environment. |
| Sapienza *et al*. (2006) | Capabilities are configurations of routines and resources that allow an organisation to achieve its goals (Nelson & Winter 1982), whereas dynamic capabilities reflect a firm's ability to reconfigure its capabilities to adapt to its environment. |
| Zahara *et al*. (2006) | "*the abilities to re-configure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decisionmaker(s)*"<br>This definition brings up front in an explicit manner the role of management as decision makers. |
| Wang and Zajac (2007) | "*a firm's behavioural orientation constantly to integrate, reconfigure, renew and create its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment to attain and sustain competitive advantage*" |
| Cillo *et al*. (2007) | Dynamic capabilities are processes based on knowledge – they especially regard knowledge creation, knowledge integration and knowledge reconfiguration. |
| Helfat *et al.* (2007) | "*the capacity of an organization to purposefully create, extend or modify its resource base*" |

*Source: Own work*

Researchers have provided several examples of dynamic capabilities. Some of those examples are the following:

- *Strategic decision making capabilities*: Refers to the processes by which managers merge different business, functional and personal expertise to make the necessary decisions for building the strategy of the firm (Eisenhardt, 1989; Fredrickson, 1984; Judge and Miller, 1991). Day (1994b) calls the ability to identify market opportunities "*market sensing capabilities*".
- *Innovative capability*: It refers to a firm's ability to develop new products (Clark and Fujimoto, 1991; Dougherty, 1992; Helfat and Raubitschek, 2000) and/or find new markets, through aligning strategic innovative orientation with innovative behaviours and processes (Deeds *et al*., 1999; Lazonick and Prencipe, 2005; Petroni, 1998; Tripsas, 1997). This capability encompasses several dimensions, such as new product and/or service development, development of new production processes and methods, new market identification. Burgelman *et al*. (2003) define it as "*the comprehensive set of characteristics of an organization that facilitate and support innovation strategies*".
- *Resource gaining capabilities*: Refers to the internal creation of resources such as market intelligence (Galunic and Rodan, 1998) or new and useful knowledge based on previous knowledge (Kim, 1997; Helfat, 1997; Henderson and Cockburn, 1994) and acquisition of external resources via alliance/acquisition ventures which introduce and transfer new resources from external partners into the firm (Capron *et al*., 1998; Gulati, 1999; Lane and Lubatkin, 1998; Powell *et al*., 1996).
- *Adaptive capabilities*[2]: Wand and Zajac (2007) define this capability as "*a firm's ability to identify and capitalise on emerging market opportunities*" in a timely fashion through the alignment of internal organization factors (e.g. resources and capabilities) with external environmental changes. It refers to the processes needed to rearrange the pairing of firm's processes, routines and resources to tap into new market opportunities, (Eisenhardt and Brown, 1999; Hansen, 1999; Hargadon and Sutton, 1997; Szulanski, 1996). These capabilities refer, among other things, to the firm's ability to disseminate (Kogut and Zander, 1996a), and respond (Amit and Schoemaker, 1993) to market intelligence on customer needs.

  According to Gibson and Brikinshaw (2004) adaptive capability also refers to the management ability to encourage people to challenge old traditions and practices. In the

[2] Also referred to as resource allocation and realignment/reconfiguration capabilities.

context of newly established firms this capability refers to positioning itself in the market space.

The need for realignment to external factors may require internal mutations in the organizational form, products, services, resources and capabilities (Rindova and Kotha, 2001), therefore, adaptive capability also refers to the ability to effectively integrate patterns of interaction by specifying the organizing principles by which individual inputs are integrated (Grant, 1996a). In other words, it is to the ability to effectively allocate resources, assigning tasks, and synchronizing activities.

- *Absorptive capability:* Cohen and Levinthal (1990) defined this capability as "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends … the ability to evaluate and utilize outside knowledge is largely a function of the level of prior knowledge".

  This definition clearly shows the three components of absorptive capability: *identification*, *assimilation* and *exploitation* of external knowledge gathered from markets, clients, and competitors. Zahra and George (2002a) introduced an additional component, *transformation of knowledge*[3], which is "*a firm's capability to develop and refine the routines that facilitate combining existing knowledge and the newly acquired and assimilated knowledge*".

  Building on Cohen and Levinthal's (1990) definition we could say that one of the key determinants of the effectiveness of absorptive capabilities is internal knowledge; as a consequence, absorptive capability is (at least partially) path dependant as experience and prior knowledge facilitate the use of new knowledge. Factors such as employee training policies and their level of education (Rothwell and Dodgson, 1991), as well as the firm's knowledge sharing policies (Van den Bosch *et al.*, 1999), R&D investment (Stock *et al*., 2001; Rocha, 1999; Cantner and Pyka, 1998; Leahy and Neary, 2004; Grünfeld, 2003), and organizational structure (Daghfous, 2004) could affect the absorptive capacity of a firm.

- *Coevolving capabilities*: Refers to the processes by which managers promote collaboration between different functional areas of the firm in order to create new, synergistic resource-mixes (Eisenhardt and Galunic, 2000);

[3] It could be argued that this component, "transformation of knowledge", is an integral part of the "exploitation" components; therefore there would be no need to split it into two separate components.

According to Eisenhardt and Martin (2000) it is not dynamic capabilities themselves, but the competences they generate and/or improve, that constitute the source of competitive advantage. The key issue for a firm operating in a dynamic industry is to generate capabilities that allow the firm to continuously improve existing and create new competences, and through those competences create new advantages.

### 1.3.5 How dynamic capabilities emerge?

#### 1.3.5.1 Factors influencing capability development

Where capabilities come from, which influence factors exist, and whether these factors are internal or external to the firm is heavily discussed among scholars. According to Teece *et al*. (1997), three factors determine the creation and evolution of dynamic capabilities: *processes*, *positions*, and *paths*. *Processes* determine how things are done in a company including routines, current practices, and learning. These processes assume three major roles in the firms: a relatively static role of coordinating and integrating existing resources, a dynamic role of learning, and a transformation role of reconfiguring and redeploying resources. *Position* refers to the firm's current specific resource endowments such as information technology, financial resources, customer base, and external supplier relationship. *Paths* refer to the strategic alternatives available to the firm as well as its path dependencies. None of these factors are independent from each other, as it is clear that specific managerial processes are shaped by the firm's asset positions as well as the firm's evolutionary path; today's resource endowment is determined by past decisions concerning processes that generated and/or renewed the resource base; and finally, the strategic choices available today depend on the existing processes and resources.

When searching for a common denominator for the factors that determine the evolution of dynamic capabilities, researchers often place strong emphasis on the internal organization but fail to take the context in which companies operate into account. This is likely to generate a research bias (Leoncini *et al*., 2003). As Teece *et al*. (1997) state: "*Too often, the contextual dependence of original performance is poorly appreciated*". Ethiraj *et al*. (2005) examined the case of a company in the Indian software industry to answer the question of where capabilities come from. They found that one class of capabilities, the *client-specific capabilities*, evolves by learning from repeated interactions with certain clients. The authors demonstrated that capabilities are often *context-specific* and incur different costs and benefits.

#### 1.3.5.2 Idiosyncrasy of dynamic capabilities

If dynamic capabilities are to be the source of competitive advantage, and building on the VRIN argument in the RBV, they would need to be unique, hard to replicate and difficult to transfer. A dynamic capability that is widely available to every enterprise or that is easily copied or transferred can hardly be the base of a sustainable competitive advantage. The degree to which dynamic capabilities are transferable is a matter of debate, and the degree of idiosyncrasy of each capability would be given by path dependencies and causal ambiguity.

Some authors argue that the evolution of dynamic capabilities is based on the history of the company and is consequently difficult to replicate. Supporting this notion, Kogut and Zander (1992) argue that firm's future options are path dependent, as the creation of new skills is based on the existing capabilities of the firm at any point in time. According to the authors, path-dependency means that the historic decisions made by the firm over the years, that confer a specific know-how and traditions to the firm, determine today's capabilities. Along these lines, Teece *et al*. (1997) argue that a "*firm's position is unique, inimitable and non replicable combination of assets built over time*". Path-dependency is a natural result of the learning mechanisms underlying dynamic capabilities. Given that learning is a cumulative process (Nonaka and Takeushi, 1995), the firm's current existing knowledge is continually influencing its future knowledge. Specifically, existing knowledge influences the processing mechanisms which lead to the development of path dependent capabilities to acquire and integrate external sources of knowledge (Cohen and Levinthal, 1990). If this is the case, firms' present strategic choices in terms of processes, routines and resources are conditioned by history, therefore transferability is low and the competitive advantage arising from those choices is more sustainable. Therefore, the uniqueness of a dynamic capability is derived from the uniqueness of the firm's history.

Another characteristic of dynamic capabilities that adds to their idiosyncrasy is causal ambiguity (Peteraf, 1993; Lippman and Rumelt, 1982). Causal ambiguity is defined as the uncertainty that "*stems from a basic ambiguity concerning the nature of the causal connections between actions and results*" (Lippman and Rumelt, 1982). The term addresses the fact that that the links between specific capabilities, resources and skills and the results they lead to are not always clear and direct, hence not understood even by decision makers within the firm. It follows logically that when competing firms do not fully understand the interactions between different elements of a firm's dynamic capability, it is extremely hard for them to replicate it and attain

the observed results. This way, causal ambiguity acts as an isolating mechanism protecting the firm from imitators and safeguarding competitive advantage.

Having a seemingly different opinion, Eisenhardt and Martin (2000) argue that dynamic capabilities are a set of identifiable specific strategic and organizational processes (e.g. product development or strategic decision making), and despite their different characteristics, they exhibit commonalities across firms. These commonalities were associated by the authors with the widely researched notion of "best practices". Even though these commonalities can only partially explain a dynamic capability, they can easily be identified, codified and replicated reducing the level of idiosyncrasy of a dynamic capability. Zander and Kogut (1995) supported this argument when they evaluated not only the transferability of capabilities between firms, but also within firms, and demonstrated that the speed of the transfer of capabilities within and between firms is determined by the degree of codification and how easily the capabilities are taught.

#### 1.3.5.3 Capability lifecycle

The development of capabilities follows sequential steps (Brown and Eisenhardt, 1997; Eisenhardt and Martin, 2000), and therefore higher order capabilities require lower order capabilities to be developed.

Helfat and Peteraf (2003) introduced the concept of a capability lifecycle, which underpins the evolution of organizational capabilities (both operational and dynamic capabilities) over time and helps to explain the fundamental sources of heterogeneity among otherwise similar capabilities. The authors suggest all capabilities behave in a dynamic manner, following a lifecycle model that can explain their emergence, development, and change. Autio *et al*. (2011) challenge the idea that capabilities are developed as part of a "master plan", and favour the idea that in environments characterized by high levels of uncertainty and causal ambiguity, improvisation and experimentation is common. The stages of the capability lifecycle suggested by Helfat and Peteraf (2003) are three:

- *Founding stage*: The lifecycle of a capability begins with an organized group or team and a central objective, which achievement entails the creation of this capability. As the authors say, the endowments present at founding stage (knowledge, skills, experience, social ties within and outside of the team, and cognition) precondition the emergence of a capability. These endowments also provide an initial source of heterogeneity that

is derived from the attributes of the individuals, the teams, their leadership, and the available inputs.

- *Development stage*: The capability develops through the search by the team for viable alternatives. Selection of alternatives depends on the conditions of the founding stage. Capability development is path dependant as it is influenced by prior experience that the team brings with it, by the initial path chosen, by the success of the initial alternative, by new alternatives that appear reasonable based on the initial development path, and by choices made within the limited set of alternatives. In addition to learning, other factors such as worker-management relations, individual worker experiences, capital investment, and R&D all contribute to capability improvement.
- *Maturity stage*: This stage entails capability maintenance, and it involves exercising the capability, becoming more embedded in the organizational memory though routines.

Once a capability reaches maturity stage and internal factors (e.g. managerial or corporate decisions) and/or external factors (e.g. demand, science and technology, government policy) affect its development, a capability branching may occur. Branching of a capability is nothing but the altering of an original capability into other forms, and could take the capability into one of six possible stages: *retirement* (death), *retrenchment* (reduction), *renewal* (to reinforce and reconfigure the capability), *replication* (to apply it in other department/function inside the firm), *redeployment* (to apply it along a corporation), and *recombination* (to join two or more capabilities to create a new one). These stages may follow one another in a sequence over time or can take place simultaneously. The branches of the capability lifecycle reflect the impact of two sorts of selection effects: those that threaten to make a capability obsolete, and those that provide new opportunities for capabilities to grow and improve (Helfat and Peteraf, 2003).

#### 1.3.5.4 Effects of market dynamism on dynamic capabilities

The link between dynamic capabilities and market dynamism has been present already in the early writings on the subject. Teece *et al*. (1997) identify a dynamic capability as the firm's ability to address rapidly changing environments. While recognizing that dynamic capabilities could gain importance with market dynamism, Zahra *et al*. (2006) warn us that judging whether a capability is dynamic or not on the basis of the market's rate of change misses the true nature of the distinction between operational and dynamic capabilities. Furthermore, the authors recognize that need for reconfiguration or renewal of routines and/or resource base may emanate from changes in internal organizational conditions and not in the market.

Eisenhardt and Martin (2000) suggested that the effectiveness and essence of dynamic capabilities varies with market dynamism: "*In moderately dynamic markets, dynamic capabilities resemble the traditional conception of routines. They are detailed, analytic, stable processes with predictable outcomes. In contrast, in high-velocity markets, they are simple, highly experiential and fragile processes with unpredictable outcomes*". Therefore, in markets characterized by low dynamicity, dynamic capabilities rely on exploitation of existing knowledge though the implementation of detailed and specific routines with predictable outcomes; when market dynamism is high, dynamic capabilities rely on the exploration and creation of new knowledge for specific situations, and resemble simple, experiential, unstable processes, flexible enough to allow for quick adaptation.

Geroski (2005) looks at the effect of market dynamism on capabilities from the point of view of firm growth trying to reconcile empirical findings that firm growth rates are random and the theoretical notion that growth is powered by capabilities. In order to do this Geroski suggests that while capabilities are durable, their relevance is not. Therefore, capabilities only generate value in specific market settings where they can be deployed; when market conditions change unpredictably the capabilities that were the engine of firm growth in the past may prove to be irrelevant in the new context.

Based on what has been said before, and assuming that export markets are more dynamic than domestic markets, one could argue that businesses entering international markets would require different dynamic capabilities than those used for domestic markets, or that at least the morphology of those capabilities may require adaptation (i.e. becoming less formal and structured). The relevance of dynamic capabilities increases when we take into consideration that international markets tend to be more difficult to predict than local markets, increasing the probability that the capabilities that fuel domestic growth could be irrelevant to fuel international growth.

#### 1.3.5.5 The role of managers in the development of dynamic capabilities

Related to the discussion of the factors influencing the evolution and development of dynamic capabilities, is the question of whether managers have the possibility to actively manipulate this evolution. The question about the real influence that managers have on the emergence and nurturing of dynamic capabilities remains unanswered and has been rather treated as implicit assumption and rarely as a focus of an empirical investigation. Winter (2003) summarizes the discussion as follows: "*Still others believe that they exist, but suspect that they are "born not*

*made" – i.e., they doubt that deliberate efforts to strengthen such capabilities are a genuine option for managers*".

Andersen and Kheam (1998) and Wright *et al*. (2008) argue that management's perception of capabilities is more relevant than existing capabilities in the international strategy formulation process. Certain factors such as existing managerial beliefs (i.e. the manager's view of the world) could potentially inhibit the emergence of dynamic capabilities. Leonard-Barton (1992) found that new product development capabilities are rooted in pre-existing values and that these values can not only enhance, but also inhibit innovation. It is the questioning of traditional systems, skills and values the trigger that "*may cause a complete redefinition of core capabilities or initiate new ones*" (Leonard-Barton, 1992). Tripsas and Gavetti (2000) support this proposition of managerial beliefs as an influence factor for the emergence of dynamic capabilities and stress the need for further research on the topic by concluding: "*Importantly, emphasizing cognitive elements in the explanation of the genesis and evolution of capabilities raises both positive and normative issues that traditional explanations in the evolutionary realm largely overlook*".

Geroski (2005) suggests that businesses would most likely have multiple capabilities that are strategically complementary. This would imply that it is the portfolio of capabilities and the way they are deployed at each point in time, rather than each individual capability, which is important. Manager's failure to effectively and efficiently deploy the full set of strategically complementary capabilities results in business underperformance. The failure of one capability would make the entire group of capabilities to fail. This means that the weakest capability would determine the strength of the entire portfolio of capabilities, and the ability of the business to make money and increase market share.

Deliberate underinvestment is yet another way in which managers can influence the development of dynamic capabilities. According to Winter (2003), dynamic capabilities are not the only way to accomplish change within the firm, ad hoc problem-solving is an alternative method. Ad hoc problem solving could be seen as a substitute for dynamic capabilities and may be more cost-efficient than investments in dynamic capabilities. Therefore, the role of the managers is to carefully evaluate whether they want either to invest in their dynamic capabilities or trust their ad hoc problem solving skills, and this way influence the present and future development of dynamic capabilities in the firm (Zollo and Winter, 2002). Along the same line of reasoning, Ethiraj *et al*. (2005) suggest that managers should carefully evaluate the investments in the development of capabilities. Hence, certain capabilities can be intentionally

promoted by deliberate investments in their development. A potential explanation why a manager may chose not to invest in the development of a dynamic capability is the high uncertainty of the investment effort. In the words of Ethiraj *et al*. (2005): "*Although there are a number of theoretical arguments about the characteristics of resources or capabilities that yield competitive advantage […] and what prevents their imitation […], we have limited understanding of where capabilities come from or what kinds of investment in money, time, and managerial effort is required in building them*".

When it refers to managers and their effect on the evolution of dynamic capabilities, most of the research has focused on the general manager (Martin, 2010; Martin and Eisenhardt, 2010). However, if we agree that there exist a hierarchy of dynamic capabilities, then it is fair to believe that managers at different levels of the firm contribute to different capabilities. This way middle managers would mostly contribute to single business process, while top management would align processes along the entire firm (Gavetti, 2005).

#### 1.3.5.6 Dynamic capabilities and enterprise learning

Organizational learning is a process through which organizations encode experiential inferences into behavioural routines through better knowledge and understanding (Fiol and Lyles, 1985). Teece *et al*. (1997) define learning as "*a process by which repetition and experimentation enable tasks to be performed better and quicker. It also enables new production opportunities to be identified*". It has been widely agreed that the emergence and evolution of dynamic capabilities is strongly determined by the learning mechanisms in place within the firm (Eisenhardt and Martin, 2000; Zollo and Winter, 2002). Capabilities are the result of tacit accumulation of experience embedded in routines and learning by doing, as well as the result of deliberate firm-specific investments in organizational structure and systems to make constant improvements in routines and practices (Zollo and Winter, 2002). Furthermore, some authors argue that the firm's learning ability is a much stronger determinant of dynamic capabilities than the firm's resource endowment or the industry structure (Sanchez and Heene, 1996; Zollo and Winter, 2002).

Some authors (Bowman and Ambrosini, 2003; Teece *et al*., 1997) referred to learning as a specific type of process underlying dynamic capabilities, which is based on repetition, experimentation, and identification of new opportunities. Conversely, Zott (2003) identifies learning of resource deployment as a performance-relevant attribute of dynamic capabilities. Other authors (Eisenhardt and Martin, 2000; Winter, 2003) argue that learning mechanisms

guide the evolution of dynamic capabilities. These conflicting positions, sometimes semantic, are partially resolved by Zollo and Winter (2002), who consider dynamic capabilities to be the result of learning to shape operational capabilities, and this again reflects the idea that learning may itself be considered as a *second order* dynamic capability.

The notion of absorptive capacity closely relates to organizational learning as it focuses on how organizations absorb knowledge from external sources. Absorptive capacity was first introduced by Cohen and Levinthal (1990), who define it as a firm's ability "*to recognize the value of new, external knowledge, assimilate it and apply it to commercial ends*". In the words of the authors: "*absorptive capacity [...] depends on processes and routines within the organization that enable the organization to share, communicate, and transfer individual level learning to the organizational level learning*".

Kim (1998) argues that absorptive capacity is comprised of two important elements: prior knowledge and intensity of efforts. Prior knowledge consists of "*individual units of knowledge available within the organization*" and it is conducive to "*increase the ability to make sense of and assimilate new knowledge*" (Kim, 1998). Intensity or efforts "*represents the amount of energy expended by organizational members to solve problems*" (Kim, 1998). Among the different factors that affect a firm's absorptive capacity one could think of employee training policies and their level of education (Rothwell and Dodgson, 1991), the firm's knowledge sharing policies (Van den Bosch *et al*., 1999), R&D investment (Stock *et al*., 2001; Rocha, 1999; Leahy and Neary, 2004; Grünfeld, 2003), and organizational structure (Daghfous, 2004).

Building on the notion of routines and processes, Zahra and George (2002 a) provide their own definition of absorptive capacity: "*a set of organizational routines and processes by which firms acquire, assimilate, transform and exploit knowledge to produce a dynamic capability*". Furthermore, the authors argue that absorptive capacity varies along two dimensions: the *potential capacity*, which comprises routines and activities for knowledge acquisition and assimilation; and the *realized capacity*, which centres on routines and activities for knowledge transformation and exploitation.

Yeung *et al*. (2007) argue that organizational learning could be seen from two different perspectives: *organizational behaviour* and the *strategic and operational perspective*. From the perspective of organizational behaviour, learning in the organization occurs through individual learning and adaptation to experience, and when learning processes are embedded among

individuals in the organization a learning culture is established. From the strategic and operational perspective organizational learning depends on the learning orientation of the firm.

Researchers have identified different learning mechanisms that are involved in the creation and evolution of dynamic capabilities. Verona and Ravasi (2003) showed how certain knowledge-based processes (knowledge creation, absorption, integration, and reconfiguration) play a crucial role in the development of dynamic capabilities. Eisenhardt and Martin (2000) reinforce the importance of *practice* and *codification*. Repeated practice helps employees better understand processes and develop more effective routines; therefore, it also helps the firm to accelerate the formation of dynamic capabilities. Codification is the mean by which the firm institutionalises the repeated practice into formal procedures. Similarly, Zollo and Winter (2002) identify three learning mechanisms: *experience accumulation*, *knowledge articulation*, and *knowledge codification*; each one requiring higher levels of investments as the firm moves away from experience accumulation and into knowledge codification. Autio *et al*. (2011) suggest that capabilities are developed via trial-and-error learning and learning-by-doing. Trial-and-error learning refers to changes to firm behaviour based on insights gained from exposure to situations that refine existing knowledge or reduce variation in activity (Argote, 1999). Learning-by-doing refers to improvements in existing processes because of repetitive execution of the same task (Arrow, 1962)

Closely related to the notion of organizational learning is that of knowledge management, and in particular, knowledge sharing. Organizational learning refers to the creation of knowledge within the organization, while knowledge management refers to the processes required to manage the created knowledge (Spender, 2008).

According to Firestone and McElroy (2004) there are three types of business processes that are closely related to knowledge: *operational business processes*; *knowledge processes* and processes *for managing knowledge*. *Operational processes* are those that use knowledge but, apart from knowledge about specific events and conditions, do not produce or integrate it. *Knowledge processes* could be classified in two groups: the process that produce new knowledge and that could take the form of *information acquisition*, *individual and group learning*, *knowledge claim formulation* and *knowledge claim evaluation*; and the processes that aim at knowledge integration, and that could take the form of *knowledge and information broadcasting processes*, *searching/retrieving processes*, *knowledge sharing processes* (peer to peer presentation of previous produced knowledge) and *teaching* (hierarchical presentation of previously produced knowledge).

## 1.4 Chapter summary

The following box attempts to provide a quick summary of the most salient topics that were discussed in this chapter.

***Box 8: Summary of chapter 1***

Competitive advantage is the ability of a business to consistently achieve above normal rents by conceiving unique value propositions for existing, emerging, and imagined future clients, allowing it to become the preferred supplier in the market and shape future markets.

The dynamic capabilities approach, born in the 1990s as a natural extention of the RBV, is the most adequate framework to analyse why and how enterprises develop long term competitive advantage. In order to adapt to an ever changing market environment, SMEs need to develop capabilities that renew their resource base and provide flexibility to their operations. Dynamic capabilities do this.

Dynamic capabilities importance resides in their ability to provide flexibility to the business, but share similar characteristics and are are conceived in the same manner as other capabilities. Each capability is constituted of processes and its enabling resources, and groups of capabilities constitute competences.

# CHAPTER 2: DYNAMIC CAPABILITIES AS DRIVERS OF SME GROWTH AND INTERNATIONALIZATION

## 2.1 Introductory remarks

Small and medium sized enterprises (SMEs) are crucial for the well-functioning of the European economy as they represent the largest part of the industrial base in most countries and have a key role to play in the generation of economic well-being and prosperity (Acs *et al*., 1997; Katsikeas *et al*., 1998; Sousa, 2004; Brouthers and Nakos, 2005; Nieto and Fernandez, 2006; Karandemiz and Göçer, 2007). In the context of the European Union (EU) it is estimated that there exist approximately 23 million SMEs, representing over 99% of the total population of EU enterprises, and generating close to 100 million jobs. The six largest EU economies, i.e. France, Germany, Italy, Poland, Spain and the United Kingdom represent over 70% of all SMEs of EU27 (European Commission, 2010).

The internationalization of production and commercialization activities has had a notorious effect in SMEs. The shift of economic activities outside the boundaries of existing nation states has been identified as the most dramatic change shaping the current economic landscape (Audretsch, 2003). National borders are gradually disappearing, markets are being deregulated, and improved logistics and communications systems are being made available to a larger proportion of companies. The information technology revolution has shortened distances and is allowing firms to be exposed to new markets, as well as bringing competition even closer. Access to international markets offers several business opportunities, such as new niche markets, possibilities to exploit economies of scope, and technological advantages (OECD, 2004). As a result of all these, SMEs that do not consider internationalisation are unknowingly self-imposing a severe restriction on their potential for long term survival (European Commission, 2007).

Within the EU27, 25% of SMEs conduct export or import activities, 50% of which (approximately 13% of the overall SME population) do so with partners beyond the EU's internal market (European Commission, 2010). Studies show that proactive internationalisation strengthens growth, increases competitiveness and favours the firm's long term sustainability. SMEs that are internationally active show higher turnover growth, higher employment growth, and higher levels of innovation (European Commission, 2010). According to the OECD (2004) about one-fifth of manufacturing SMEs draw between 10% and 40% of their turnover from cross-border activities.

SMEs are believed to be less equipped than larger firms to deal with the difficulties of internationalization. When compared with larger multinational firms, SMEs tend to possess

limited resources (Benito and Welch, 1997; Knight and Liesch, 2002), and those resources could be spread too thinly causing internal coordination problems (Manolová *et al.*, 2002). Despite these potential disadvantages, many SMEs choose internationalization as their preferred growth strategy. As a result of resource constrains SMEs may find it difficult to undertake activities such as foreign market research, product adaptation, finding and contacting potential foreign clients and suppliers, and freight forwarding (Knight and Liesch, 2002). Given that it is likely that for those SMEs that engage in cross border activities the proportion of resources devoted to these activities is much larger than those devoted by larger enterprises, the endeavour is riskier and the failure more costly (Buckley, 1997).

Despite the various modes of entry theoretically available to SMEs, exporting represents the preferred strategic option for this type of firms (Zhao and Zou, 2002) as it is seen as the fastest, and easiest way of becoming international (Leonidou *et al*., 2007; Theodosiou and Katsikea, 2007; Hultman *et al*., 2009). An important reason why export tends to be the preferred option for SMEs to internationalise is that it requires the least amount of resources when compared with other options (Morgan and Katsikeas, 1997), and this has a direct effect on the firms' survival, growth and long-term viability.

Based on the belief that international firms perform better than purely domestic firms, internationalisation is seen as a route for growth (McDougal *et al*., 1994; Tallman and Li, 1996; Jones, 1999), even though in reality selling abroad may not necessarily contribute positively to firm growth and profitability (McDougall and Oviatt, 1996; Westhead *et al*., 2001). Despite all difficulties and constrains many SMEs succeed in their international operations, and through it, they boost their growth and survival chances. According to the European Commission (2008) the capacity and effective internationalisation of SMEs is well below its full potential. It is because of this that improving the international contributions of SMEs is considered an increasingly important policy priority in many countries. This dissertation attempts to understand the inner mechanics that make these SMEs successful. A thorough understanding of the drivers of SMEs international competitiveness is of utmost importance in today's business and economic environment as SMEs' involvement in international markets is growing (Fernandez and Nieto, 2006).

This chapter will explore the concepts of firm growth and internationalization, and will seek to understand the role of business capabilities in the success of an internationalization-led growth strategy.

## 2.2 Firm growth

### 2.2.1 Edith Penrose's theory of the growth of the firm

***General considerations***

If we are interested in understanding the inner mechanics and motivations behind firm growth, probably the best place to start is Penrose's *The Theory of the Growth of the Firm* (1959). Penrose considered that firms grew not because of advantages associated to firm size, but rather as a natural consequence of the availability of unutilized resources' services due to internal learning by doing.

Penrose saw the firm as an idiosyncratic collection of productive resources that render multiple services to the firm. It is this heterogeneity of resources and services from resources that makes each firm unique. The distinction between resources and the services that resources render is not trivial and it could be considered as an antecedent of the transition between the RBV and dynamic capabilities, as what it is important is not the resources themselves, but what the business could achieve with them. Of all the firm's resources, human resources, particularly managers are considered to be the most important as they play a catalyst role when they combine firm's resources and transforming them into capabilities.

The implementation of any growth strategy would initially require resources that exceed those strictly necessary for its execution. The reason for this is that at the onset of the implementation of the growth strategy managers are not familiar with the new routines and processes that need to be put in place. Over time managers gain knowledge and experience, and consequently their tasks require less attention and energy, releasing managerial resources and increasing the amount of managerial services available for other uses. Furthermore, the implementation of a growth plan also generates new resources in the form of knowledge and experience. This excess availability of resources and resources' services act as an internal stimulus for growth as they can be used to focus on value creating growth opportunities.

Penrose also introduced the notion that there is no limit for the size of the firm, but there is a limit to the rate of growth the firm could achieve. The limit to growth is given by the firm's productive opportunity set, and most notably, by the adjustment costs of growth. These two terms are of outmost importance to fully understand Penrose's growth theory.

***Productive opportunity set and adjustment costs of growth***

The productive opportunity set is the strategic management equivalent of the microeconomic concept of production possibility frontier for a given endowment of resources and capabilities. The productive opportunity set is the result of the manager's ability to identify combinations of resources and capabilities that generate profitable growth opportunities. The extent to which the manager is able to identify and exploit different growth opportunities is linked to the manager's subjective assessment of the firm's capabilities and resources. Given the subjectivity of the assessment, two firms operating in the same market with the same set of resources, may be able to identify different opportunities and may generate different services from the same resource endowment (Penrose, 1959; Kor *et al*., 2007). It is the matching of resources to perceived opportunities, rather than the size of the resource endowments *per se*, which determines the scope of the firm's productive opportunity set.

One way to widen the firm's productive opportunity set is by growing the stock of knowledge and improving the processes to manage this resource. The increase in the stock of knowledge is a side product of the implementation of the growth plans, and this increase in knowledge causes not only the alteration of the productive opportunity set of the firm but also contributes to the uniqueness of the opportunity set of each firm. In Penrose's words: "*There is a close relation between the various kinds of resources with which a firm works and the development of the ideas, experience, and knowledge of its managers and entrepreneurs, and we have seen how changing experience and knowledge affect not only the productive services available from resources, but also "demand" as seen by the firm. Unused productive services are, for the enterprising firm, at the same time a challenge to innovate, an incentive to expand, and a source of competitive advantage. They facilitate the introduction of new combinations of resources – innovation – within the firm*".

Once the firm has been able to identify and exploit a growth opportunity, the speed of firm growth would be constrained by the adjustment costs of growth, which basically relate to the utilization and development of business capabilities as they reflect the time and effort required to integrate new resources, routines and processes. Particularly important is the incorporation of new managers to the firm. These managers would need to undergo a training and assimilation process before they can start providing valuable services to the firm. This process would require the services of existing resources being utilized for production and marketing purposes elsewhere in the firm, causing potential deterioration in the effective and efficient implementation of firm's activities. A corollary of Penrose's ideas is that the faster the firm

attempts to grow, the higher the costs incurred due to time compression diseconomies (Dierickx and Cool, 1989). Penrose envisaged that the adjustment costs of growth would potentially be very significant and would become an important constraint to firm growth. This became known as the Penrose effect (Marris, 1964), which despite its theoretical attractiveness, it seems not to find strong support in empirical literature (Geroski, 2005).

### 2.2.2 How is firm growth measured?

The issue of measuring firm growth could be tackled from two distinct angles: the way business manager's understand and measure growth, and the way scholars do it.

Relative performance has often been shown to be a strong motivational factor defining firm behaviour (Greve, 1998). Firms tend to practice what is called social comparison (Festinger, 1954), and assess their performance *vis-à-vis* that of similar firms. Such social comparisons allow firms to interpret the adequacy of their own strategies and to set their own standard for an acceptable performance level based on the performance of referent firms (Greve, 2008). When it comes to set growth goals, firms will set their own growth goals relative to the growth levels of other firms in their comparison groups (Elsbach and Kramer, 1996; Denrell, 2003).

Collecting and evaluating large quantities of external information tends to be very challenging for most enterprises, particularly for those of small size. For this reason these firms tend to focus on collecting information from similar firms (i.e. their peers in the same industry) and use them as a reference group for comparison (Lant and Baum, 1995). This process of peer comparison creates and strengthens shared beliefs among firms that look at each other as a source of inspiration and to validate their actions (Porac *et al*., 1999). Internal data is easily accessible and simpler to process, therefore firms often rely on internal historical comparisons when making decisions, setting goals, and judging current growth levels (Menon and Pfeffer, 2003).

From the scholars' point of view, the notion of firm growth is used to describe firm's transition from small to big and from weak to strong. It is therefore important that we are able to identify the parameters that would allow us to determine whether a firm is expanding and becoming stronger. Growth is a multidimensional construct that represents different underlying value creation processes. There is no generally accepted measure for firm growth; therefore scholars have used a large number of different indicators (Barkham *et al*., 1996). Using Penrose's (1959) words: "*there is no way of measuring an amount of expansion, or even the size of a firm, that is*

*not open to serious conceptual objections*". Growth is usually measured using indicators such as relative or absolute growth in turnover, sales, total assets, total profits, cash flow, employees, physical output, market share or capital. Industry-specific studies could use more specialized measures such as the number of seats for restaurants or theatres, and the number of vehicles for taxi or car rental companies (Bolton, 1971). Some researchers (Barkham *et al*., 1996; Lind 2005) highlight the importance of using indicators based on changes in turnover such as added value. According to Lind (2005) value creation is what makes a firm competitive, therefore it is a more accurate measurement of SMEs´ competitiveness than market shares, return on investment or profit.

The most commonly used indicators in empirical studies analysing the firm growth are growth in sales and in employment (Weinzimmer *et al*., 1998; Sleuwaegen and Goedhuys, 2002; Delmar *et al*., 2003; Delmar, 2006). Employment numbers is a measure that is easily accessible, as it is an important figure for policy makers (Barkham *et al*., 1996). Moreover, total sales and employees are the parameters that entrepreneurs and managers normally rely on to appraise the growth of their firms (Hoy *et al*., 1992; Delmar *et al*., 2003).

Despite being the most widely used, these two measures are not unanimously accepted. Delmar *et al*. (2003) argue that these indicators are not necessarily correlated with each other, nor are they determined by the same independent variables. Chandler *et al*., (2009) support this view and suggest that not only growth in revenues is not highly correlated with growth in employees, but is also much more volatile. According to Weinzimmer *et al*. (1998), sales growth and growth in employees may be correlated but they exhibit different relationships with the determinants of firm growth, and conclude that "*researchers studying sales growth and those studying growth in number of employees are likely interested in very different theoretical concepts*". Furthermore, sales figures could potentially be affected by inflation and exchange rate fluctuations, and it could be potentially difficult to compare sales figures in different industries. Because of these difficulties, scholars highlight the importance of using multiple growth indicators when studying firm growth (Delmar *et al*., 2003; Davidsson *et al*., 2006).

### 2.2.3 Stages of firm growth

The history of stage models of firm growth, also known as life cycle models, started in the second half of the last century with the work of Davis (1951). These models suggest that businesses evolve over time in a consistent and predictable manner moving through various evolutionary stages characterized by unique problems, and resulting in the need for different management

skills, priorities, structural configurations, strategies and decision making mechanisms. The transition between stages is the result of periods of revolution or dramatic organizational change (Greiner, 1972). Chandler (1962) model is considered one of the most important works published in those early days (Channon, 1973; Rumelt, 1974; Miller, 1986). Chandler's work was soon followed by other researchers (Downs, 1967; Greiner, 1972; Katz and Kahn, 1978; Miles and Snow, 1978; Kimberly, 1979; Adizes, 1979 and 1989; Filey and Aldag, 1980; Kimberly and Miles, 1980; Galbraith, 1982; Tyebjee *et al*., 1983; Churchill and Lewis, 1983; Miller and Friesen, 1983 and 1984a and 1984b; Smith *et al*., 1985; Block and MacMillan, 1985; Scott and Bruce, 1987; Kazanjian, 1988; Baird and Meshoulam, 1988; Kazanjian and Drazin, 1990; Moores and Yuen, 2001) who also addressed the topic and developed their own versions of the life cycle model. Quinn and Cameron (1983) summarized existing life cycle models until the end of the 1970s and suggested the life cycle summary model.

Even though the concept of a stage has been defined in a vague and general manner, there is a relative agreement that it is a multidimensional phenomenon. Most models suggested in the literature make use of the same limited number of dimensions to describe the stages, and differences in the pattern and magnitude of those dimensions determine the placement of firms to the different stages (Hanks *et al*., 1994). These descriptive dimensions relate to the organization context (e.g. age, size, growth rate, and tasks or challenges faced by the firm) and the organizational structure of the firm (e.g. structural form, formalization, centralization, and vertical differentiation).

Despite their popularity, the life cycle approach was also criticized by researchers. Penrose (1952) was an early critic of the stage models: "*… the available evidence does not support the theory that firms have a life cycle characterized by a consistent transition through recognizable stages of development similar to those of living organisms. Indeed, just the opposite conclusion must be drawn: the development of firms does not proceed according to the same 'grim' laws as does that of living organisms*".

In their work, O'Farrell and Hitchens (1988) summarize the main critiques that stage models have received over time (Penrose, 1952; Perry, 1982; Gibb and Davies, 1990 and 1991; Hay and Kamshad, 1994; Merz *et al*., 1994). According to the authors:

- Some stage models do not focus their attention on the underlying factors driving the firm's growth, but rather focus on the development of a classification scheme.

- These models tend to be normative in nature without seriously attempting to validate their inferences with rigorous empirical evidence.
- When empirical studies have been undertaken, they are done with relatively small samples and cross-sectional data. Intuitively, longitudinal data seems more appropriate to analyse firm growth.
- There is an embedded notion in these models that all SMEs will inexorably pass through each stage in a sequential manner, or will cease to exist attempting to pass to the next stage. A minority of models accept that firms may skip stages and that variations in the sequencing may occur. The possibility of regression through some stages seems not to have received sufficient attention in the literature.
- Stage models, in general, do not pay attention to early stages in the life of the firm before it is established. The entrepreneurship stages prior to the creation of the business are in most cases neglected in the literature.
- Firm size is usually measured in terms of the two most widely used indicators: sales revenues and/or number of employees.
- Internal firm dynamics receive most of the attention in the literature, relegating to a secondary level of importance all external factors associated to the social, economic and business environments in which the form undertake its activities.

This work has opted to follow a dynamic capabilities approach. Based on this, the concept of life cycle and the utilization of contextual and structural dimensions to describe and analyse firm growth is not fully satisfactory. The reason for this is that the dimensions used to describe each stage are the visible results of management decisions linked to the development of business capabilities, and the ability of the firm to mutate and reconfigure its resource base. In that sense, the growth rate, the size, the structural form, and all other previously mentioned dimensions are not the reason why a firm should be placed in one stage or another, but rather the observable result of the underlying processes and capabilities needed to overcome certain difficulties or to implement a particular business strategy. If we follow this argument, we will conclude that:

1. The passing from one stage to the next is the result of a deliberate decision made by the manager.
2. Firms could decide to revert back to earlier stages of growth as part of a deliberate business strategy (e.g. the firm could decide to discontinue its presence in foreign markets).

3. Firms could skip stages.
4. There is no inexorably condition by which a firm must either pass to the next stage or die attempting it (i.e. firms could voluntarily decide not to grow).
5. There is no "decline stage" at the end of the road, as the decline of the firm could occur at any time during the life of the firm as a direct consequence of the inability to adapt to ever changing market conditions.
6. Each stage in the life of the firm is characterized by certain operational and strategic challenges, and at all points in time the manager makes a conscious decision whether to proceed to the next stage or not. In order to overcome these challenges the firm will need to develop new capabilities and adjust its resource base. The degree of success in doing this will determine the vulnerability of the firm and its chances of survival.

A key objective behind the development of growth stage models was the identification of managerial challenges associated with growth (Nambisan, 2002). Academia has only achieved partial success as most authors appear to have followed Chandler's (1962) approach by which firms develop patters of organization structure in response to common growth and market challenges. Failure to adequately adapt to the new environment results in crises which could seriously jeopardize the growth process. The literature is relatively silent with respect to what those challenges are, what their origin is, and how firms should act in order to overcome them.

### 2.2.4 Firm growth strategies

Given the different internal and external factors stimulating and hampering firm growth, the manager should identify the best possible strategy to achieve firm growth. The manager would have to answer two different but highly interrelated questions: Where to grow?; and How to grow?. Once these two questions are answered, the next step for the manager would be to proceed to identify the necessary resources to implement the growth strategy.

#### 2.2.4.1 Where to grow?

The answer to this question relates directly to the strategy of the firm as it deals with the identification of a client group and an offer that would fulfil the unmet needs of those clients better than the competition.

At this point the manager should use the tools available in the business literature, such as Porter's generic strategies. Another tool that could be used is the Product-Market Strategy Grid.

Despite the fact that there is no agreement with respect to the adequacy of product and market based strategies, it is interesting nevertheless to look at the options that could be identified when using the product-market strategy grid (Ansoff, 1965; Burns, 1989):

***Table 8: Product-market strategy grid***

| | Existing product | New product |
|---|---|---|
| Existing market | Market penetration | Product development |
| New market | Market development | Diversification |

*Source: Ansoff (1965)*

**Market penetration** is a growth strategy based on increasing the firm's existing share of products in the markets where it is active, in that sense is an effort to increase sales without departing from an original product-market strategy. The tangible objective behind this strategy would be to: a) make current customers buy more and more often, and b). induce brand switching (i.e. convince those product/service users that are buying from the competition to start buying from the firm), and d) avoid the opposite of *a* and *b* from happening. **Product development** refers to the strategy by which the business develops new products to meet the needs of its existing customers. A **market development** strategy is characterized by a response from the firm to new market opportunities opened to its existing offer (i.e. introducing existing products and/or services with minor adaptations to new customer groups in order to transform those potential customers that are neither buying from the firm nor the competition, into buying customers. **Diversification** is probably the riskier strategy to follow as it is characterized by a change in the characteristics of the business' product line and market. The business may find itself in need of developing new capabilities and/or acquiring new resources to be able to succeed in this strategy.

**Growth through internationalization** could clearly be part of a **market development strategy** or a **diversification strategy**. Even though firms enter foreign markets with a clear growth intention (McDougal *et al*., 1994; Jones, 1999), it is not necessarily the case that selling in foreign markets contributes positively to overall firm growth. Managing growth itself is difficult for small firms (Hambrick and Crozier, 1985), and managing growth through foreign sales can be even more difficult due to the set of liabilities described that will be covered later in this chapter. McDougall and Oviatt (1996) found that foreign sales as a proportion of total sales was significantly related to relative market share, but not to overall firm profitability. In a large-scale

study of small and medium-sized enterprises, Westhead *et al*. (2001) found that exporting was not significantly related to sales growth, employment growth, or even firm survival. These mixed findings suggest that there has been under-specification of intervening processes in the hypothesized relationship between foreign sales and firm growth.

Although a firm may expand its skills over time, in the short run, it is restricted by its current skill set, which will shape the future strategic options that its management is capable of rendering (Penrose, 1959). Managers have also been shown to depend heavily on recent strategies to reduce their cognitive burdens and simplify information processing (Steiner and Rain, 1989; Amburgey and Miner, 1992; Hogarth and Einhorn, 1992). As firms become dependent on a particular strategy, they might lose capabilities and confidence in other growth strategies (Levitt and March, 1988; Levinthal and March, 1993).

#### 2.2.4.2 How to grow?

The answer to this question has a clear operational angle as it refers to the identification of resources to implement the growth strategy, and a strategic angle as it deals with the convenience or not of engaging others –external to the firm- in the firm's growth strategy.

Penrose (1959) suggests two possible growth paths for a firm: 1. to "*build new plants and to create new markets for itself*" (i.e. organic or internal growth); or 2. to "*acquire plants and markets of already existing firms*" (i.e. acquisitive or external growth).

***Organic growth***

The essential feature of organic growth is the reinvestment of previous years' profit in the existing business, together with additional capital provided by the different shareholders. When firms experience healthy organic growth, managers typically are satisfied with their current growth levels and hence are likely to avoid risky strategic actions (March and Shapira, 1987), such as paying an excessive premium to acquire another business.

Organic growth is a slower way of growth compared to acquisitions as it requires the internal development of new resources and processes (e.g. setting up the whole business, hiring and recruiting employees, investing in machineries, etc.) internally. On the positive side, organic growth provides high levels of corporate control, encourages internal entrepreneurship, and protects organisational cultures and core values (Denrell *et al*., 2003).

There are three types of organic growth strategies (Von Krogh and Cusumano, 2001):

- *Scaling*: This approach is applicable when the business can produce an offer with unique value that addresses a large market, and it is easy and cheap to distribute. This strategy requires aggressive investment in marketing and continuous product development as well as good knowledge of mass marketing and product support. Key accomplishments are: the ability to specialise and standardize, to hire the right mix of people, adapt the corporate and implementation structure and learn and share lessons from customers quickly.
- *Duplication*: This strategy suits business where geographical expansion is required and/or where distribution needs to be improved. The key is adapting experience in original market to the new regions. Key accomplishments are the ability to package know-how and yet be able to adapt that know-how to new markets, generating tension between the benefits of standardization and adaptation. Small business growth through geographic expansion is a challenging growth strategy, as during the course of opening a new geographical site the manager will be confronted with the task of managing an existing business and a start-up at the same time (Barringer and Greening, 1998).
- *Granulation*: This strategy requires the firm to identify among the different businesses that it may have, the one that could be the basis of future growth and focus on its development without forgetting about the rest. This can be risky as it may not fully leverage the company's existing knowledge base.

In principle the three organic growth strategies are compatible with internationalization. *Scaling* seems to be more in line with internationalization through exports, while *duplication* would induce the business to conduct foreign direct investment. A *granulation* strategy could potentially lead the business to start exporting or to invest abroad, depending on the characteristics of the market and the client.

The downside of organic growth is that knowledge created could be path dependent in nature and close to the firm's existing knowledge base, hampering future break-through innovation by limiting the firm's ability to recombine existing resources (Nelson and Winter, 1982). Clearly this imposes serious limits to the firm's ability to learn from areas outside those where the firm holds prior knowledge (Teece, 1987; Cohen and Levinthal, 1990). This has an impact on the firm's productive opportunity set as when searching for new business opportunities, managers tend to search within limited distance of the firm's current activities before moving into

uncharted terrains (Cyert and March, 1963). The same occurs when managers develop the business' capabilities, they tend to rely on continuous adjustment and fine tuning of existing processes and activities (Winter and Szulanski, 2001). This generates path dependencies that eventually prevent the search for new ways of recombining existing resources (Levinthal and March, 1993). Over time, organic growth could lead the business to become "*simple and inert*" (Vermeulen and Barkema, 2001), as rigidities created by the repeated use of resources (Miller, 1994) could potentially be detrimental to the future growth of the firm. The more dynamic the environment is, the more serious the problem becomes.

***Growth by acquisition***

As opposed to the organic growth strategy, acquisitions are regarded as a large firm growth strategy (Anslinger and Copeland, 1996). Acquisitions are often the fastest way a firm can capitalize on growth opportunities by expanding into new geographic or product markets (Vermeulen and Barkema, 2001). Consistent with the RBV, a strategy of acquisition may enable a business to take advantage of growth opportunities by accessing a bundle of complementary resources, which when combined with the acquiring firm's resources, creates new resource-combination possibilities (Harrison *et al*. 1991, 2001; Wang and Zajac, 2007).

In addition to becoming bigger and thus acquiring greater market power, there could be several other reasons for acquisitions - e.g. acquiring synergies, industry restructuring, mitigation of risk, acquiring new knowledge and other necessary resources, overcoming barriers to entry, and entering new markets quickly - (Chatterjee, 1992; Birkinshaw, 1999; Tetenbaum, 1999; Empson, 2000; Vermeulen and Barkema, 2001).

Although acquisitions can be an effective growth vehicle, they are inherently risky as they are associated with significant uncertainty and a high potential for financial loss (Ravenscraft and Scherer, 1987). Finding the right business to acquire could potentially take considerable time and effort, and once found, realizing the gains from the synergies and economies of scale and scope could be elusive. Consistent with this notion, prior studies indicate that acquisitions frequently fail to create value for shareholders (King *et al*., 2004). High premiums paid for acquisitions are usually cited as one of the main reasons for acquisition failure, as the acquiring firm must extract value sufficient to offset the high price paid for the acquisition (Haunschild, 1994; Hitt *et al*., 2001).

Acquisition growth strategies could also be classified in four categories:

- *Horizontal*: This strategy implies buying a business that does the same thing as the buying company (i.e. a competitor). Value is created through risk reduction by means of increased diversification of the customer base, geographical spread, reduced cost of capital due to increased scale, and increase in market power.
- *Vertical*: This strategy involves acquiring businesses further up or down the supply chain (i.e. the acquired firm is a customer or supplier of the buying firm). Value could be created by cost reduction, reduced risk and by increased scale.
- *Umbrella Branding*: This strategy involves acquiring businesses that can be leveraged by values inherent in a brand. Value is created by increasing consumer confidence and thus attracting new customers.
- *Diversification*: This strategy is also called lateral integration as it requires the firm to buy an unrelated business.

By introducing new non-path dependent knowledge to the business, growth by acquisition may be conducive for the development of new productive services of existing resources, and shaping and expansion of the productive opportunity set by conceiving new resource combinations.

## 2.3 Growth by internationalization

### 2.3.1 Theories explaining international trade

Classical theories of international trade were developed under the umbrella of political economy. These theories focused on nationwide benefits of free trade rather than on firm level profits, but nevertheless they constitute the theoretical starting point in the explanation of the rational and mechanics of international transactions.

The theory of ***absolute advantage*** (Smith, 1776) shows the possibility for a country to produce more efficiently (i.e. cheaper) a given product than another country. In this case, the country would specialize in the production of goods with smaller absolute costs, and this would determine international trade flows.

With his ***comparative advantage*** theory, David Ricardo (1817) showed how specialization is possible and beneficial even when a country doesn't have an absolute advantage in the production of any good. Resource allocation and production would move toward those goods with lower marginal and opportunity cost.

In the first half of the 20th century, two Swedish researchers, Eli Heckscher and Bertil Ohlin from the Stockholm School of Economics, developed what came to be known as the ***Hecksler-Olhin factor endowment model***. This model shows how country differences in their productive factor endowments originated differences in the production capacities, and determined the flows of international trade. The model predicts that countries will export products that use their abundant and cheap factor(s) of production and import products that use the countries' scarce factor(s).

The ***product life cycle theory*** developed by Vernon (1966) suggests that a trade cycle begins when a product is made by the mother company, then by its subsidiaries, and then by any other company anywhere in the world, where the production costs are the lowest possible. This way, a country that initially is an exporter of the products could potentially become an importer, as the product reaches the last stage of its life cycle.

In general, theories of international trade have succeeded in providing an explanation for international trade flows from an aggregate point of view, but failed in finding an explanation of why firms choose a specific location instead of another, or why they prefer to produce abroad rather than export to that country. Theoretical developments on firm internationalization have, in most of the cases, followed a separate path and focused on firm specific characteristics that would condition the decision to internationalize.

### 2.3.2 The internationalization of the firm

The internationalization of a business typically takes place in a rather exploratory, testing and probing way by exploiting home advantages (i.e. unique resources and capabilities) and transferring them abroad. A comprehensive and generally agreed theory explaining the internationalization process of SMEs is still lacking (Dunning, 1993; Oviatt and McDougall, 1999). Academics (Andersen, 1997; Fletcher, 2001; Rialp and Rialp, 2001; Fletcher, 2004, Crick and Spence, 2005) have suggested that the best approach would be to bring together different theories, as no single theory could explain the entrepreneurial decision to start foreign business activities.

Despite the fact that there exist many theories and models that try to explain firm internationalization[4], two frameworks have received preferential attention when studying the

[4] For a complete survey of the different internationalization models please refer to Villarreal (2007).

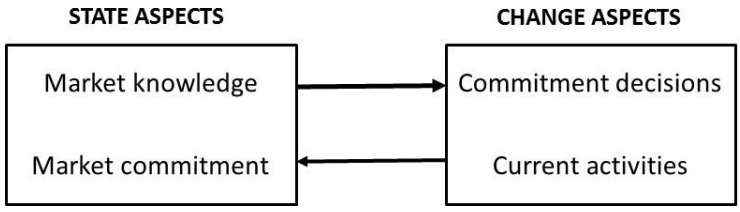
internationalization of small and medium sized enterprises: the process or stage model of internationalization, also known as the *Uppsala model* as it was the result of studies undertaken at the University of Uppsala on the internationalization of Swedish manufacturing companies (Johanson and Vahlne, 1977 and 1990); and the *international entrepreneurship model* (IE) that resulted from the study of the internationalization of new ventures that opted for international markets soon after they were funded (Oviatt and McDougall, 1994; McDougall *et al*., 1994).

#### 2.3.2.1 The Uppsala model… and other stage models

The Uppsala Model (Johanson and Vahlne, 1977 and 1990) draws primarily on the behavioural theory of the firm (Cyert and March, 1963), on Penrose's (1959) theory of firm growth, and on the empirical observations of Johanson and Wiedersheim-Paul (1975)[5]. This model, and all those stage models inspired from it rest on the RBV, as the core explanation of the model is based on the sequential increase in market knowledge. The model follows the notion that firms initially gain a strong foothold in their domestic market before they leap into international business. Special attention is given to the development of international knowledge and organizational learning, which allows the firm to react to incentives to internationalize with marginal increments in its resource commitments to international markets. This way, internationalization is an incremental and sequential process that starts relatively late in a firm's lifecycle after the firm has been able to grow in its domestic market.

Johanson and Vahlne (1977 and 1990) argued that the current state of internationalization is an important explanatory factor of the path the firm will follow in its internationalization process. Furthermore, they distinguished between *state aspects* (*market knowledge* and *market commitment*) and *change aspects* (*commitment decision* and *current activities*).

***Figure 3: State and change aspects of firm Internationalization***




*Source: Johanson and Vahlne (1977)*

[5] A review of the most fundamental contributions to this model could be found in Johanson and Wiedersheim-Paul (1975), Johanson and Vahlne (1977 and 1990), Bilkey (1978), Piercy (1981), Thomas and Araujo (1985 and 1986), Welch and Loustarinen (1988), Melin (1992), and Andersen (1993).

In relation to the *state aspects*, and in particular to the *market knowledge*, the Uppsala model identifies in the lack of knowledge the major impediment to the internationalization of the firm. Penrose (1959) distinguished between two types of knowledge: *general knowledge* and experiential or *market specific knowledge*. General knowledge can be easily transferred, while experiential or market specific knowledge can only be acquired through experience and cannot be transferred or separated from the primary source. Firm internationalization requires both types of knowledge, but the Uppsala model focuses its attention on experiential learning and its evolutionary character. Since experiential knowledge cannot be bought, the threats and opportunities posed by a new market will have to be discovered by the firm as it enters international market. This characteristic of experiential learning is an important reason why internationalization is seen as a slow process (Johanson and Vahlne, 1977).

The Uppsala model assumes that it is direct firm-level internationalization experience that matters for managerial decisions to further internationalize, and *current activities* are the main source of experience as they shape the ability of the firm to explore new opportunities in the future. International experience in various countries will allow the business to develop its knowledge stocks (Ghoshal, 1987), which will then allow firms to be able to handle a variety of issues when conducting business in foreign markets. It is only through the slow process of accumulating experience, knowledge and confidence in psychically[6] close foreign markets that the firm develops the necessary capabilities to operate in international markets and could eventually consider tapping opportunities in markets that are progressively more psychically distant. Erramilli (1991) found that an increase in international experience leads to entries into markets that are culturally more remote. The development of new market knowledge is important for success in international markets (Bartlett and Ghoshal, 1987). This knowledge influences the firm's ability to adapt its products to local market conditions, capitalize on market dynamism through rapid new product developments, and identify emerging technological changes that can influence firm performance. More recently, Johanson and Vahne (2003 and 2009) highlighted the importance of networks as an important variable in the firm's learning and information gathering process.

[6] Psychic distance is determined by cultural distance (Linder, 1961; Ronen and Shenkar, 1985; Kogut and Singh, 1988; Contractor, 1990), as well as geographic distance (Linneman, 1966; Krugman, 1991; Hirsch and Hashai, 2000) between countries. Johanson and Vahlne (1977) define psychic distance as the "*sum of factors preventing the flow of information from and to the market*". Examples of factors preventing information flow include language, education, business practices, political systems, culture, and industrial development (Johanson and Wiedersheim-Paul, 1975; Johanson and Vahlne, 1977).

Experience will affect the way managers make their resource *commitment decisions*. The accumulation of knowledge and experience, as well as the development of the necessary capabilities, allows management to make further resource commitments, and potentially move away from exports and into foreign direct investment (Cavusgil, 1980; Johanson and Wiedersheim-Paul, 1975; Reid 1981). As enterprises are naturally risk averse and seek to avoid uncertainty as much as possible, there is a direct relationship between the firm's exposure to foreign markets and its resource commitments to cross-border activities (Martin *et al*., 1998; Erramilli, 1991; Luo and Peng, 1999; Delios and Henisz, 2003). When referring to the *market commitment*, as part of the *state aspects*, Johanson and Vahlne (1977 and 1990) believed it was composed of two factors: the quantity of resources committed (e.g. size of the investment in terms of employees, marketing budget, etc.) and the degree of commitment which refers to the degree of specificity and idiosyncrasy of the resources devoted to the internationalization efforts (a concept closely related to that of sunk costs).

Johanson and Wiedersheim-Paul (1975) made a prediction *vis-à-vis* the mode of entry while outlining four successive stages of international involvement:

- Stage 1: No regular export activities
- Stage 2: Export via independent representatives (agents)
- Stage 3: Establishment of an overseas sales subsidiary
- Stage 4: Overseas production/manufacturing units

These stages, called the establishment chain, show an increasing commitment in mode of entry from no international activity through exporting to foreign direct investment in sales subsidiaries and production facilities. Empirical research on the Uppsala model and entry modes is mixed with some researchers finding support (Denis and Depelteau, 1985; Kogut and Singh, 1988; Dow, 2000) for the model prediction that firms follow an incremental, sequential path of internationalization while other scholars fail to find support (Turnbull, 1987; Benito and Gripsud, 1992) for this prediction.

Several researchers have followed the steps of the Uppsala model and have developed their own sequential models. Bilkey and Tesar (1977) developed a six stages model that range from total lack of interest in exporting to strong commitment and involvement in export activities. Wiedersheim-Paul *et al*. (1978) focused their attention in the pre-export behaviour of firms, and identified three types of non-exporting firms based on their willingness to start exporting and their ability to collect and process information: 1. Domestically oriented enterprises that do not

plan to export; 2. Passive non-exporters that could potentially be involved in export activities if they receive non-solicited export orders; and 3. Active non-exporters that make deliberate efforts to initiate export activities. The model suggests that the willingness to export and the capability to collect and process information increases as the firm moves from being domestically oriented towards being active non-exporter. The model was later reviewed by Welch and Wiedersheim-Paul (1980). Other stage models were developed by Cavusgil (1982 and 1984a), Barrett and Wilkinson (1986), Mugler and Miesenböck (1989), Moon and Lee (1990), and Moini (1995).

Almost all stage models focus their attention to the pre-exporting activities of the firm and to the establishment of initial export operations without devoting much attention to alternative internationalization mechanisms. The reason for this is that exporting is the mode of entry most frequently selected by enterprises in the initial stages of internationalization (Bradley 1995) as it allows for an incremental increase in the commitment of resources based on previous success and it allows for the accumulation of learning and experience (Root, 1994).

Stage models have been questioned for being deterministic and mechanic in nature (Christensen, 1991; Andersen, 1993 and 1997). Studies have shown that in some cases, contrary to what sequential models would prescribe, firms reduce their international activities or withdraw from international operations (Benito and Welch, 1997), withdraw from foreign direct investment and return to exporting (Chetty, 1999), or discontinue single products or product lines (Calof and Beamish, 1995). Probably the most serious challenge came in the late 1980s and early 1990s because of their inability to explain the emergence of SMEs that deviated from the sequential path and entered international markets (in some occasions multiple markets simultaneously) soon after they started operations. This phenomenon prompted researchers to investigate the sources and consequences of this behaviour and gave rise to the international entrepreneurship model (Oviatt and McDougall, 1994 and 2005; McDougall *et al*., 1994; Knight and Cavusgil, 1996; Madsen and Servais, 1997; Zahra and George, 2002a). Several authors associated to the sequential approach have warned of potentially negative consequences on the survival of the firm due to early internationalization (Johanson and Vahlne, 1977 and 1990; Eriksson *et al*., 1997) as a consequence of the firm's lack of knowledge and/or resources, and the relatively high levels of uncertainty prevailing in international markets.

***Table 9: Stage models of firm internationalization***

| Johanson and Wiedersheim-Paul (1975) | Bilkey and Tesar (1977) | Wiedersheim-Paul *et al*. (1978) | Cavusgil (1980) | Reid (1981) | Czinkota (1982) | Cavusgil (1982) |
|---|---|---|---|---|---|---|
| | Stage 1: Management is not interested in exporting | Stage 1: Domestic orientation, no intention to export. | Stage 1: Domestic marketing: The firm sells only to the home market. | | Stage 1: The completely uninterested firm. | Stage 1: Non-exporting firm without any interest in gathering export related information. |
| | Stage 2: Management is willing to fill unsolicited orders, but makes no effort to explore the feasibility of active exporting. | Stage 2: Passive non-exporter. The firm shows some inclination to gather export related information | | Stage 1: Export awareness: Problem of opportunity recognition, arousal of need. | Stage 2: The partially interested firm. | Stage 2: Pre-involvement. The non-exporting firm is interested in gathering export related information. |
| | Stage 3: Management actively explores the feasibility of active exporting. | Stage 3: Active non-exporter. Firm shows high levels of interest in gathering export related information. | Stage 2: Pre-export stage: The firm searches for information and evaluates the feasibility of undertaking exporting. | Stage 2: Export intention: Motivation, attitude, beliefs, and expectancy about export. | Stage 3: The exporting firm. | |
| Stage 1: No regular export activities. | Stage 4: The firm exports on an experimental basis to some psychologically close country. | | Stage 3: Experimental involvement: The firm starts exporting on a limited basis to some psychologically close market. | Stage 3: Export trial: Personal experience from limited exporting. | Stage 4: The experimental firm. | Stage 3: Experimental or limited export involvement. The firm exports less than 10% of its output. |
| | | | | Stage 4: Export evaluation: Results from engaging in exporting. | | |
| Stage 2: Export via independent representatives (agents). | Stage 5: The firm is an experienced exporter. | | Stage 4: Active involvement: Exporting to more new markets – direct exporting – increases in sales volume. | Stage 5: Export acceptance: Adoption of exporting/rejection of exporting | Stage 5: The experienced exporter. | Stage 4: Active export involvement. The firm exports more than 10% of its output. |
| Stage 3: Establishment of an overseas sales subsidiary. | Stage 6: Management explores the feasibility of exporting to other more psychologically distant countries. | | Stage 5: Committed involvement: Management constantly makes choices in allocating limited resources between domestic and foreign markets. | | Stage 6: The experienced large exporter. | |
| Stage 4: Overseas production/manufacturing units. | | | | | | |

*Sources: Andersen (1993), Leonidou and Katsikeas (1996), Rialp (1997) and own elaboration.*

***Table 9: Stage models of firm internationalization (cont.)***

| Cavusgil (1984a) | Barret and Wilkinson (1986) | Mugler and Misenböck (1989) | Moon and Lee (1990) | Lim *et al*. (1991) | Moini (1995) |
|---|---|---|---|---|---|
| | Stage 1: Non-exporters that have never considered exporting. | Stage 1:Non-exporters without any intention of exporting. | | | |
| | Stage 2: Non-exporters that are considering entering into export markets. | Stage 2: Non-exporters willing to export if there is an opportunity to do so. | | Stage 1: Acknowledgement of exporting as a viable business opportunity. | |
| | | | | Stage 2: Interest for selecting export as a viable business strategy. | |
| | | | | Stage 3: Intention to initiate exports. | |
| Stage 1: Experimental export involvement. Low degree of commitment to develop foreign markets. | Stage 3: Passive or discontinuous exporters. Firms that are currently not exporting. | Stage 3: Firms with an export intensity lower than 10% and no active interest in obtaining foreign sales orders. | Stage 1: Low level of export involvement. | Stage 4: Trial and/or adoption of export activity. | Stage 1: Partially interested exporters. |
| Stage 2: Active export involvement. The firm acknowledges the contributions of foreign markets. | Stage 4: Current exporters. | Stage 4: Firms with an export intensity above 10% and active to get foreign sales orders. | Stage 2: Medium level of export involvement. | | Stage 2: Growing exporters. |
| Stage 3: Committed export involvement. Systematic assessment of business opportunities in foreign markets, without limiting these opportunities to closer markets. | Stage 5: Current exporters with foreign direct investment. | Stage 5 - 6: Firms with export intensity above 10%. | Stage 3: High level of export involvement. | | Stage 3: Successful exporters. |

*Sources: Andersen (1993), Leonidou and Katsikeas (1996), Rialp (1997) and own elaboration.*

### 2.3.2.2 International entrepreneurship model

International Entrepreneurship has been defined as "*the process of creatively discovering and exploiting opportunities that lie outside a firm's domestic markets in the pursuit of competitive advantage*" (Zahra and George, 2002b). The IE model sees internationalization as part of an entrepreneurial and proactive behaviour. The higher levels of risk an enterprise has to face when choosing to internationalize underpins the notion that internationalization is an act of entrepreneurship in search of opportunities for growth and wealth by expanding into new markets (Lumpkin and Dess, 1996; Zahra *et al*., 1999). Furthermore, it is a strategy that entails a fundamental departure from existing practices (Damanpour, 1991; Birkinshaw, 1997) with high levels of risk associated with it (Miller, 1983). This model focuses its attention on early internationalizing firms that seem to contradict firm behaviour as explained by the Uppsala Model. Ultimately, the major benefits of early internationalization are improvements in organization-level learning, innovation, growth level and speed, market share and performance (Bloodgood *et al*., 1996; McDougall and Oviatt, 1996; Zahra *et al*., 2000; Autio *et al*., 2000; Williams, 2010).

These early internationalizing enterprises have been addressed in the literature with different names. Oviatt and McDougal (1994) call them *international new ventures* (INV) and defined them as firms that "*from inception, seek to derive significant competitive advantage from the use of the resources and the sale of outputs to multiple countries*". The authors identified four distinct types of INVs: *export-import start-ups*, *multinational traders*, *geographically focused start-ups*, and *global start-ups*. Global start-ups, also called *born global*, have received special attention by the research community (Rennie, 1993, Knight and Cavusgil, 1996; Madsen and Servais, 1997; Bell and McNaughton, 2000; Madsen *et al*., 2000; Rasmussen *et al*., 2001; Aspelund and Moen, 2001; Moen, 2002). Knight and Cavusgil (1996) define *born global* firms as "*small, technology-oriented companies that operate in international markets from the earliest days of their establishment*"[7]. Born global firms are nothing but small, entrepreneurial enterprises that are virtually multinational from inception and generate most of their revenues in international markets (Oviatt and McDougall, 1994 and 1997; Bell, 1995; Bloodgood *et al*.,

[7] Other similar terms used in the literature are *high technology start-ups* (Jolly *et al*., 1992, Burgel and Murray, 2000), *global high tech firms* (Roberts and Senturia, 1996), *instant exporters* (McAuley, 1999), *instant internationals* (McAuley, 1999; Fillis, 2001), *born-internationals* (Kundu and Katz, 2003), *micromultinationals* (Dimitratos *et al*., 2003), and *early internationalizing firms* (Rialp *et al*., 2005).

1996). A large percentage of these early internationalizing SME are characterized as knowledge-intensive (Korot and Tovstiga, 1999).

The IE model suggest that the decision to internationalize is conditioned by a mix of external forces (e.g. industry, competition, and clients), internal forces (e.g. firm specific capabilities and resources), and the competences and experience of the management team, being these last two factors the most important ones[8]. There are other factors that may prompt young SMEs to internationalize such as the quest for new resources, tapping into markets of high growth, and the build-up of economies of scale (Foley, 2004). According to Rialp *et al*. (2005) the ten factors associated with the success of the newly internationalized SMEs are:

1) A managerial global vision from inception;
2) High degree of previous international experience on behalf of managers;
3) Management commitment;
4) Strong use of personal and business networks;
5) Market knowledge and market commitment;
6) Unique intangible assets based on knowledge management;
7) High value creation through product differentiation, leading-edge technology products, technological innovativeness (usually associated with a greater use of IT), and quality leadership;
8) A niche-focused, proactive international strategy in geographically spread lead markets around the world from the very beginning,
9) Narrowly-defined customer groups with strong customer orientation and close customer relationships; and,
10) Flexibility to adapt to rapidly changing external conditions and circumstances.

The top three factors relate directly to the managers' attitudes and experience while the following three factors to the SME's resources, and the last four to its capabilities, particularly dynamic capabilities. It has been long acknowledged that senior management attitudes towards internationalization play a crucial role in the decision to internationalize and in the firm's success in international markets (Daily *et al*., 2000; Carpenter *et al*., 2001). Senior **management attitudes** and experience in international markets will affect the strategic choices related to the firm's internationalization (Calof and Beamish, 1994; Oviatt and McDougall, 1995; Bloodgood *et al*., 1996; Madsen and Servais, 1997; Carpenter and Frederickson, 2001). Furthermore, Autio

[8] For a detailed summary of the factors affecting internationalization please refer to Zahra and George (2002b).

*et al*. (1997) found a positive relationship between senior management's growth orientation and the likelihood that the firm would internationalize its operations. Cavusgil and Naor, (1987) showed that age, education, place of college education, and foreign language skills are poor discriminating variables between exporters and non-exporters.

In line with the RBV, firm's **resources** constitute an important factor that conditions the decision to internationalize. Zahra *et al*. (2003) point out that intangible assets such as reputation and networks could have a significant impact on the speed and degree of internationalization. Another intangible asset, knowledge, has also been found to positively influence international entrepreneurship (Oviatt and McDougall, 1995), and international expansion has proven to boost firm's stock of knowledge and information (Hitt *et al*., 1997; Barkema and Vermeulen, 1998; Zahra *et al*., 2000) as a result of the experience gained by facing new competitors in new environments. This new knowledge allows the firm to better adapt its offerings and strategy to an ever changing domestic and international markets.

Certain **capabilities** have also been identified as determinants of firm internationalization. Particular attention has been given to the firm's product differentiation and innovation capabilities (Burgel and Murray, 1998; Zahra *et al*., 2000), and the importance of spending in R&D (Bloodgood *et al*., 1996; Autio *et al*., 1997; Fontes and Coombs, 1997). Because early internationalizing firms promote a culture of learning that encourages innovation and technology development, these firms are more innovative than their domestic counterparts and develop long-term technological capabilities leading to an improvement in the breadth, depth, and speed of firm-level technological learning (Zahra *et al*., 2000; McDougall *et al*., 2003; Sapienza *et al*., 2005). The ability to gather information about international markets is also positively related with firm internationalization (Autio *et al*., 1997; Karagozoglu and Lindell, 1998).

When looking at **market forces** that favour early internationalization we see that these firms typically operate in a narrowly defined market niche where products are unique, and require high amount of research and development (Luostarinen and Gabrielsson, 2004). A niche market strategy also makes it harder to grow in a single, small home market. A high degree of specialization requires internationalization if the firm wants to achieve substantial growth (Kuivalainen *et al*., 2006). These firms combine the benefits from internationalization with the potential benefits normally associated with young and small firms (i.e. small firms innovate more, respond more quickly to customers and crises, and adapt easier to their environment (Dobrev and Carroll, 2003; Lewin and Massini, 2003). According to Autio and Sapienza (2000),

the IE model seems to be better suited to explain the early internationalization patterns of rather technology-intensive new firms.

Despite the general agreement on the theoretical definition of the unit of analysis of the IE model (i.e. young internationally-oriented entrepreneurial), lees agreement has been reached on the criteria used for empirical studies (Rialp *et al*., 2005). Some authors consider that for firms to be considered an early internationalizing firm they should do so within six years of foundation (Oviatt and McDougall, 1997), others think they should do it within two years and achieve 76% of their total sales through exports (Rennie, 1993), or three years and 25% share of total sales (Knight and Cavusgil, 1996; Madsen *et al*., 2000; Servais and Rasmussen, 2000).

#### 2.3.2.3 Two irreconcilable views of internationalization?

Although both models address the process of internationalization, they appear to provide contradicting explanations about why, how, and when an enterprise starts its internationalization process. Researchers often ignore their complimentarily and place the IE and Uppsala models at odds with each other (Oviatt and McDougall, 1994). A closer look at both approaches highlights their complementarities and puts some doubt on the generally accepted contradictions. The IE and the Uppsala models could be seen as special cases of a more general setting affected by market dynamism and internal characteristics of the firm.

The table below shows the most salient characteristics of each model and will serve to initiate the discussion on whether these models are complementary or mutually exclusive.

***Table 10: The Uppsala model vs. the international entrepreneurship model***

| | THE UPPSALA MODEL | INTERNATIONAL ENTREPRENEURSHIP MODEL |
|---|---|---|
| Internationalization | Late internationalization; following an initial (long) period of no international activity. | Early internationalization is possible; firms may start their international operations soon after they are created |
| Key factors in the internationalization process | Accumulation of experience, information and know-how | Manager's attitudes, knowledge, and experience; Firm's capabilities; External market factors |
| Experience, information and know-how | Information and know-how is obtained via a sequential and incremental process resulting from the accumulation of experience and gradual exposure to international markets | Managers bring experience, information and know-how to the firm that may serve as a catalyst for early internationalization |
| Market selection | Market selection via psychic distance (from psychically close markets to more distant ones) | *A priori* no psychic or geographical proximity is required |
| Main goal of the firm | Avoid uncertainty and risks while following a growth strategy | Profit from growth opportunities in international markets |

*Source: Own work*

The Uppsala model predicts that the selected moment to initiate the internationalization process, its speed, sequence, and the selection of target markets depend on the firm's acquired experience, information and know-how. This model places special attention to the firm's risk aversion and the evolutionary learning mechanisms by which the firm overcomes risks. Through the (slow) process of gaining experience and market knowledge, the firm progressively feels more confident about entering foreign markets. The only reason for entering foreign markets in a sequential manner and at a later stage in the life of the firm is that experience, knowledge and information are acquired as part of a slow process of discovery and learning. In other words, the firm needs to acquire information and know-how, internalize it and develop capabilities that allow it to succeed in international markets. The Uppsala model assumes that at the moment of the firm's foundation, its limited endowments of experience, information and know-how hinder and prevent any attempt to internationalize.

The IE model does not necessarily contradict the aforementioned logic of the Uppsala model, but questions the initial assumption concerning the firm's endowments of experience, information, know-how, and capabilities, as well as its degree of risk aversion. This model acknowledges that experience, information and know-how are not only embedded in the firm's routines and processes, but also in the "professional memory" of its employees. Managers and employees of a newly created firm come equipped with an endowment of experience,

information and know-how from their previous professional experiences that are critical factors in the decision to internationalize (Bloodgood *et al*., 1996; Madsen and Servais, 1997; Chetty and Campbell-Hunt, 2004; Laanti *et al*., 2007). These endowments could potentially help the firm make better risk assessments about the difficulties of entering foreign markets (i.e. not bounded by psychic distance), leading to earlier internationalization.

While the typical firm fitting the Uppsala model paradigm is a firm that is fearful that a premature entry into foreign markets would threaten its survival, the typical firm in the IE model is one that is concerned about missed opportunities for growth due to hesitation to enter foreign markets. This may not necessarily be the result of structural contradictions between the two models, but simply be a result of difference in market dynamism. Research has shown that early internationalizing firms are usually located in high velocity and knowledge intensive markets, where products life-cycles are short and profitable business opportunities are short-lived (Fernhaber *et al*., 2007). Andersson *et al*. (2004) also found strong support that the degree of environmental dynamism experienced in the industry is related to international activities in small firms. In these type of environments entrepreneurs tend to be less risk averse than in more stable markets.

We could then think of these two models as complementary, each one explaining reality under specific circumstances given by the initial assumptions made. If we assume relatively stable markets and a high level of "relative ignorance" (in terms of information, know-how and capabilities) at the onset of the firm's operations, then the Uppsala model is the one that best explains the internationalization process of the firm. On the contrary, if managers and employees bring high levels of international operations expertise to the firm at the moment of its creation, and the firm operates under a dynamic market structure, then the IE model is the one that explains reality in a more adequate manner.

There are other two potential cases. The first one refers to the enterprise that starts operations with low endowment of resources and capabilities and is operating in high velocity markets. These enterprises have very little chances of surviving as they would find it almost impossible to adapt to the continuously changing environment in which they operate. The second case is that of enterprises with a relatively high level of resource and capability endowment, operating in relatively stable markets. These enterprises are likely to follow a sequential process of internationalization that would be faster than the one suggested by the Uppsala model but slower than the one suggested by the IE model. The reason for this is that while their high endowments of resources and capabilities facilitate their adaptation to international markets,

therefore speeding up the process of internationalization; they also operate in stable markets where buyer seller relationships tend to be characterized by long term commitments[9] and increments in market share tend to be slow, leading to sluggish internationalization.

This way we see clearly how the Uppsala and the IE model both explain reality only under certain circumstances, and once assumptions are lifted the explanatory power of each model changes.

***Table 11: Matrix of firm internationalization models***

| | | Resources and capabilities at the onset of operations | |
|---|---|---|---|
| | | Low | High |
| Market dynamism | Low | Uppsala model | Accelerated Uppsala model |
| | High | Limited chances of survival | IE model |

*Source: Own work*

### 2.3.3 Internationalization in an uncertain and risky environment

Risk and uncertainty have been at the centre of international business studies. Johanson and Vahlne (2006) stressed that when internationalizing their operations firms strive to keep risk taking at low levels, and they see risk and its mitigation, and uncertainty and its management, as partly determined by knowledge and experience. Risk and uncertainty are seen as constrains affecting the nature and content of the manager's decisions and conditioning the internationalization of the business (Johanson and Vahlne, 1977; Welch and Luostarinen, 1988) The international entrepreneurship literature refers to the managers' risk tolerance and hints that they might follow a risk-seeking behaviour when exploring potential business opportunities (McDougall and Oviatt, 2000; Oviatt and McDougall, 2005).

Nowadays it is well acknowledged that risk perception and risk aversion are key constructs that help understand export behaviour (Bonaccorsi, 1992). The common distinction between risk and uncertainty asserts that for the outcome of a future event to be considered a risk the manager should be able to assign a probability to its occurrence, if this outcome is unknowable or the

[9] This is particularly the case for B2B transactions, which represent the largest portion of international trade transactions.

probability cannot be quantified we refer to it as an uncertainty (Knight, 1921). An important distinction should be made between objective and subjective probabilities. Objective probabilities result from the evaluation of verifiable data, while subjective probabilities are based on observations of past events, estimates, or beliefs about future events with little quantifiable basis.

Perception of uncertainty and assessment of risks are two key factors affecting business internationalization (Liesch *et al*., 2011; Knight, 1921). Building on prospect theory[10] (Kahneman and Tversky 1979), George *et al*. (2006) argue that managers are expected to be risk prone in their decisions when they perceive a sense of mastery and control over the domain in question. Knowledge determines whether a probability can be assigned to an uncertain event, and conditions the cost-benefit analysis required to quantify risks. When initiating their internationalization perceptions of risk and uncertainty tend to be higher as firms lack the necessary knowledge and information about foreign markets and the practicalities of international activity (Leonidou, 1995b).

Internationalization success in the face of uncertainty and risk seems to be partly explained by the coping mechanisms enterprises are able to employ. In the face of greater uncertainty and higher risk firms tend to have a bias towards more amenable foreign locations (Arrow, 1969; Brewer, 2007; Dow, 2000; Johanson and Wiedersheim-Paul, 1975), they opt for low commitment foreign operation modes and tend to replicate in different markets a given mode for long periods of time (Welch and Welch, 2004).

As Rodriguez *et al*. (2010) highlight, many of the risks that could affect the internationalizing business result from and are symptoms of deficiencies existing within the company (e.g. lack of common procedures and policies). Based on the results of desk and field research the authors constructed a taxonomy of the main risk factors that prevent successful internationalization. Seventy three risk factors were classified in nine categories according to their nature.

### 2.3.4 Critical decisions for internationalization

Additional to the decision of whether firm will follow a long term gradual internationalization strategy *à-la* Uppsala or an accelerated access to international markets, Villarreal (2007) identifies other nine critical strategic decisions that all managers need to make once the decision

[10] Prospect theory argues that individuals are predicted to be risk seeking in the face of potential loss, but risk averse when dealing with potential gains.

to internationalize business operations is made. These ten strategic decisions are described in the *Business Strategic Internationalization Model* (Villarreal, 2007), and together constitute the consolidated internationalization strategy of the firm.

The additional nine strategic decisions are:

- ***Localization decision:*** Managers need to identify and evaluate the most adequate geographical market to target (Andersen, 1997). Independently of the entry mode that the business is pursuing, some factors are common in the manager's localization analysis. Among these factors we find labour productivity differentials, resource abundance, differences in technological level, demand related conditions, exchange rate risk, country risk, political environment, scale economies, existence of related clusters, strategy, structure and rivalry of incumbent businesses, psychological distance.
- ***Entry and permanence decision:*** As Rialp y Rialp (2005) explain, when a business decides to internationalize it has to determine simultaneously which market to target and the shape or structure that the operation would take in that market. This decision on the mode of entry represents one of the most important strategic decisions for any business (Root, 1994) as it will condition many of the future decisions and options open to the business (Osland *et al*., 2001).

  One could think of three alternative modes of entry: first, **exports**, which maintains production facilities in the home country, and from where the international markets are served; second, **establishment of marketing branch** to take care of all or most of the marketing-related activities aimed at developing the presence of the business in the target market, including potentially logistical responsibilities for the distribution of the business offer in the target market; and finally **establishment of production/service provision facilities** in the target market.

  In the particular case of exporting, the business could either opt for *indirect exporting*, which for all practical purposes is a domestic transaction, when selling to intermediaries located in the home country (Brady and Bearden, 1979; Root, 1994) or *direct exporting* when intermediaries are located in the target market and all the export procedures are performed by the business (Pla, 2000; Guisado, 2002; Pla and León, 2004; Rialp and Rialp, 2005; Suárez, 2005).

  When the business opts for *direct exporting* is making a strategic decision that has important operational consequences. The business should have the necessary resources and capabilities to perform all or a substantial part of the activities related to international

transactions (i.e. identification of clients, determination of the marketing strategy, handling of export documentation, physical distribution of the goods, etc.). Needless to say this approach entails more risks than indirect exporting, but potentially yields higher profits due to the elimination of the fee paid to the intermediary and the control of most or all of the marketing decisions.

Depending on the resource commitment and the capabilities available, the business can choose from a set of alternative, not necessarily mutually exclusive, ways to enter international markets directly.

- The business can enter the foreign market through an *importer* who takes care of the promotion, distribution, and all other activities related to the commercialization of the goods in the target market.
- A *distributor* is a buyer that has close links with wholesalers and retailers and therefore buys the products to resell them later. The close relationship between distributors and downstream agents in the value chain facilitate the positioning of the product. It is very likely that distributors ask exporters to sign a contract granting exclusive importing rights to the distributors. It is also frequent that exporter and distributor determine jointly the promotion and advertising strategy to be followed for the product.
- The business could decide to nominate an *agent* or *sales representative* working for the export department of the business that undertakes regular visits to the target market in order to obtain and secure transactions. Their responsibilities usually include contacting clients, negotiating terms and conditions, organizing and controlling the arrival of goods, and collecting payments. These agents usually charge a commission based on the volume of business they are able to secure.
- An *independent agent* works under contract for the exporter and sells on her behalf. The business assumes the responsibility of conducting the marketing research, heading the negotiations, and closing of the transaction, but does not take ownership of the goods. The agent may work for more than one exporter at the time.
- The business could choose to open a *sales and/or representative office* in the foreign country in charge of communications and information gathering, as well as the provision of assistance to generate, negotiate and close deals. In some cases these offices are a key instrument for the design and implementation of marketing and distribution strategies of the business.

- ***Growth decision:*** What the manager should decide here is how the business would grow in international markets. The business could opt for organic growth and through foreign direct investment create a subsidiary abroad, or choose to buy an existing firm, therefore opting of external growth. This decision does not necessarily affect the exporting firm, unless exporting is only the first step in a long term internationalization strategy that envisages foreign direct investment as an option.
- ***Coexistence decision:*** This strategic decision refers to the utilization or not of networks and strategic alliances to enter international markets. If the business considers that the best option is not to enter a foreign market on its own, the options facing the manager are numerous: licence, franchise, consortium, subcontracting, joint venture, etc. All of these alternatives differ not only in their legal implications but also in the needed skills and resources for its management, as well as the risk and responsibilities they generate for the business.
- ***Corporate decision:*** An enterprise may have more than one business. This strategic decision has to do with the identification of the businesses that would be part of the internationalization process.
- ***Internalization:*** What activities of the value chain are to be internalized? The business could either limit itself to import and/or export activities, in which case the totality of the activities are internalized, or could choose to delocalize certain production, marketing, and/or R&D related activities to foreign countries.
- ***Competitive decision:*** This decision is probably one of the most important ones as it will determine the characteristics of the offer to be taken to the target market, which is expected to be preferred by clients to that of potential competitors. The manager needs to determine the combination and balance of the offer's attributes that would satisfy clients' needs better than competitors do. This is a positioning exercise that goes beyond the simple association with marketing practices normally associated with the term.
- ***Structure decision:*** This decision refers to the structural organization of the business to be able to face the challenges posed by the internationalization process (García Echevarría, 2005). This decision would affect how decisions are made and what type of monitoring and reporting mechanisms are to be put in place.
- ***Approach decision:*** This strategic decision has very important operational implications as it refers to the philosophical conception of the international business. Is the business following a global, multi-domestic, transnational, or an export approach (Perlmutter, 1969; Porter, 1986; Prahalad and Doz, 1987; Bartlett and Ghoshal, 1991; Keegan, 1997)? This

dissertation would restrict itself to the study of those businesses opting for an export approach.

### 2.3.5 Internationalization and firm growth and performance

How well SMEs address the aforementioned issues will determine the success of their internationalization growth strategies. Internationalization is seen by many enterprises as a route for growth, as international firms are believed to be stronger and better performers than domestic firms (Tallman and Li, 1996). Autio *et al*. (2000) found that the earlier the firm enters international markets and the greater their knowledge intensity, the more rapidly these firms expand internationally.

Autio *et al*. (2000) argue that knowledge generation is important to firm growth, and that the creation of new knowledge depends on what a firm knows when it encounters new knowledge and how it processes or assimilated the new knowledge. This reasoning led the authors to believe that the age of the firm at the time it makes its first international transaction impacts how quickly it will learn in the international market and how great an impact the learned knowledge will have on its subsequent international growth. Firms that internationalize at a later age are likely to have developed rigidities that constrain what they see and how they see it. Furthermore, the authors suggest that the pace of a firm's international growth is regulated not only by the accumulation knowledge (Eriksson *et al*., 1997; Johanson and Vahlne, 1977 and 1990) but also by the amount of time the firm has devoted solely to domestic operations.

It is generally agreed that firms entering foreign markets need to step away from existing routines and create new ones in order to deal with higher levels of risk and uncertainty. This requires substantial resource commitments in terms of time, financial resources, the establishment of new relationships, and the hiring of additional personnel. Despite the heavy investments required, internationalization opens up new opportunities for growth (Sapienza *et al*., 2006). This process of adaptation necessary to compete in international markets could also support long term growth as businesses are exposed to and link up with new competitors, customers, suppliers and innovations that are outside of their domestic market, which enables them to identify new opportunities. Businesses that leverage their resources and capabilities across markets reinforce their core domestic business (Sapienza *et al*., 2006).

International operations allow businesses achieve larger sales volumes, which in turn allows them to achieve economies of scale and to increase labour productivity and management

efficiency. If international expansion is managed properly the firm should be experiencing cost reductions that would have a direct impact on its profitability. Furthermore, the consolidation of export activities also allows the business to diversify risk by expanding its revenue base and hopefully providing more stable operations. Empirical research has also shown that exporters tend to be larger, more productive, use capital and technology more intensively, and offer higher wages to its employees (Bernard and Jensen, 1999). The question that still remains to be answered is the direction of the causality between export and firm performance.

In a review of empirical studies on export and productivity, Wagner (2005) found that exporters consistently outperformed non-exporters by achieving higher levels and/or growth rates of productivity (labour productivity, total factor productivity, or both). Most of these studies addressed the issue whether these differences already existed before foreign market entry, or whether exporting made these firms more productive. Looking at post-entry differences, the evidence is mixed. Although most (54%) of the studies reporting post-entry data find positive post entry effects, a smaller number of studies (32%) find negative or insignificant differences. However, in some countries, such as the UK and Taiwan, all studies seem to find positive post-entry difference. Wagner thus concludes that the more productive firms self-select into export markets, while exporting does not necessarily improve productivity (Wagner, 2005).

These results are supported by Bernard and Jensen (1999), who in a study of US manufacturing firms, found evidence that firms soon to become exporters were bigger (even for SMEs of fewer than 250 employees exporters are found to be overall 50% to 66% larger than non-exporters, 20% to 45% larger in terms of employment, and 27% to 54% larger in terms of shipments), more efficient (7% to 8% higher labour productivity and 2% to 4% pay higher wages) and had higher growth rates. Furthermore, the authors argue that although exporting firms experience higher employment growth, productivity and wage growth are not higher, particularly in the long run.

Probably more important, especially if we think in terms of the owner/manager of an SME is whether exporting improves performance and growth. Bernard and Jensen (1999) suggest that while export does not lead to faster productivity growth at the firm level, employment growth is higher. Despite the seemingly lack of productivity gains, it seems also clear that export increases the chances of firm survival, as exporting firms are 10% more likely to survive than non-exporters of similar characteristics.

In a study of Japanese SMEs, Lu and Beamish (2001) tried to clarify the relationship between the different modes of internationalization and alternative measures of business performance such

as return on assets (ROA), return on sales (ROS), and growth of sales and assets. The authors found that the highest impact in performance is achieved through foreign direct investment (FDI), but noted that due to severe resource limitations this mode of entry was outside the reach of most SMEs. Contrary to the findings of Bernard and Jensen (1999) the authors found a positive impact of both export and FDI on business growth. When focusing on business profitability the relationship becomes more complex as the authors found that export has a negative impact on profitability, while FDI has a U-shaped curve relationship with profitability.

### 2.3.6 International ambidexterity and dynamic capabilities

This research work attempts to determine to what extent dynamic capabilities are at the core of successful SME internationalization strategies. Prange and Verdier (2011) suggest that different dynamic capabilities support different internationalization processes, and builds its theoretical framework on the notions of "exploitation" (i.e. control, certainty, risk reduction) versus "exploration" (i.e. discovery, risk-taking, experimentation, flexibility, and innovation) introduced by March (1991). The authors suggest that it would be possible to identify different types of dynamic capabilities supporting exploitative (incremental – Uppsala model) or explorative (accelerated – IE model) internationalization.

Exploitation refers to the application of existing knowledge, the reuse of existing routines and the extension of existing competencies, as well as the learning gained via local search and experimental refinement (March, 1991; Baum *et al*., 2000; Vermeulen and Barkema, 2002). The notion of exploitation is then closely linked with the incremental and path-dependent approach to internationalization of the Uppsala model (Johanson and Vahlne, 1977; Johanson and Wiedersheim-Paul, 1975), as internationalization is based on the reduction of uncertainty through the accumulation of knowledge and experience.

Exploitative internationalization is based on dynamic capabilities that are linked to path-dependent learning and knowledge accumulation through international experience. Prange and Verdier (2011) identified two types of internationalization dynamic capabilities linked with the internationalization process based on exploitation. According to the authors businesses first need to develop what they call *threshold capabilities*. These threshold capabilities are nothing but a set of capabilities necessary to operate in the domestic market, and once those capabilities have reached a sufficient threshold, they could be leveraged to enter international markets. Developing these capabilities is a necessary condition for internationalization as they allow for the incorporation of new, foreign-based assets and capabilities. The second type of capabilities

that a business needs to develop is *consolidation capabilities*. These capabilities help to create structures and routines to focus on opportunity recognition and exploitation, and are based on learning and knowledge accumulation processes. Exploitative internationalization is expected to improve survival chances and success in foreign markets (Eriksson *et al*., 2000; Tallman and Li, 1996) as it encourages the accumulation of knowledge and experience, and the reduction of uncertainties.

Exploration "*refers to learning gained through processes of concerted variation, planned experimentation, and play*'' (Baum *et al*., 2000). In terms of the internationalization efforts of the business, exploration is based on dynamic capabilities that reflect the business' ability to develop new forms of competitive advantage. This notion of exploration seems to relate directly with the internationalization process proposed by the IE model. Prange and Verdier (2011) also identify two types of dynamic capabilities that relate to exploration driven internationalization: *value-adding capabilities* derived from the business' ability to manage and access assets of other firms through inter-firm relationships in many different locations (Mathews and Zander, 2007); and *disruption capabilities* aimed at preventing firms from developing age-related liabilities (Carroll and Hannan, 2000) and lock-in effects resulting from existing routines and capabilities (Weerawardena *et al*., 2007). These disruption capabilities relate to strategic reconfiguration and questioning existing operating routines. Combined, explorative dynamic capabilities allow firms to overcome path-dependencies and inertia to induce and foster ongoing market growth.

While the Uppsala model and the IE model both represent an extreme proponent of exploitative and explorative internationalization respectively, there are a large number of firms that follow a middle-of-the-road path and therefore need to embrace both exploitation and exploration in their internationalization process (Levinthal and March, 1993; March, 2003; Jansen *et al*., 2005; Gupta *et al*., 2006; Prange and Verdier, 2011). As explained by Prange and Verdier (2011), maintaining one aspect of either exploration or exploitation may eventually turn into core rigidities (Leonard-Barton, 1992). The authors suggest that in order to overcome this and be able to achieve international ambidexterity businesses need to develop capabilities which help the business to constantly reconfigure and re-create all its other capabilities. This capability to simultaneously embrace what could be seen as antagonist strategies, exploitation and exploration, is referred to as *international ambidexterity capability*, and allows businesses to avoid the trade-offs between growth and survival.

### 2.3.7 The liabilities of a newly internationalized SME

As Knight and Cavusgil (1996) state, it is very difficult to build a general theory of firm internationalization because of the different parameters that characterize each firm that need to be taken into consideration simultaneously. SMEs differ from large firms in their resource endowment as well as in their capabilities to manage resources and conduct common business operations.

Due to their limited resources and capabilities, SMEs face a number of important challenges when it comes to internationalizing their activities. These challenges take the form of liabilities that hamper the potential for growth in foreign markets and even the subsistence of the enterprise. This section will review the liabilities faced by a newly internationalized SME, as well as the factors that incentive or hinder its internationalization.

#### 2.3.7.1 Liability of foreignness

As firms grow and develop within their home market, both the organization and its employees develop and refine certain skills, routines and processes that reflect the social, cultural, economic and legal environment in which they operate. Entering international markets is seen as an important growing opportunity for many enterprises, but often enterprises do not realize that the internationalization strategy poses a number of unique challenges in addition to the ones associated with domestic operations. These additional difficulties related to international businesses are referred to as **liability of foreignness**.

The liability of foreignness (Hymer, 1976; Zaheer, 1995; Zaheer and Mosakowski, 1997) assumes that firms operating in their domestic markets benefit from a "home turf advantage", which is another way of saying that local firms know their clients, competitors, and suppliers, and these agents know them. When compared with local incumbents, foreign newcomers tend to make mistakes more frequently, to suffer more delays, to take unnecessary risks, to have higher coordination costs, to be unfamiliar with the local culture and suffer from frictional losses that materialize as lower levels of efficiency and effectiveness (Granovetter, 1985; Mezias, 2002a). They also lack access to information networks and political influence in the host country (Zaheer and Mosakowski, 1997; Delios and Henisz, 2000; Lord and Ranft, 2000; Sofka, 2006), and even suffer possible discrimination against foreign companies (Contractor, 2007). Overcoming liability of foreignness is closely related to time and experience in the market.

Other ways in which this liability could materialize is as extra or disproportionably high costs as well as forfeited benefits (Mezias, 2002a) as a result of a lack of local roots (e.g. higher learning costs), a perceived lack of host country legitimacy, spatial distance (e.g. transportation, communication across large distances and different time zones) and/or legal restrictions imposed by the home country (e.g. high-tech exports) as described by Zaheer (1995). Researchers such as Zaheer (1995), Zaheer and Mosakowski (1997), Zaheer and Zaheer (1997), Mezias (2002b), Sofka and Zimmermann (2005), Schmidt and Sofka (2006), have identified negative effects of liability of foreignness on various performance indicators such as profitability, growth, efficiency, exposure to lawsuits, and absorptive capacities.

The knowledge and capabilities that an enterprise has developed by operating in its original markets are often not suited to operations in the new foreign markets, particularly if the target markets are dissimilar to the original markets. Political, economic, legal and cultural differences between local and foreign markets generate a need for the internationalizing firm to change and adapt its ways of doing business (McDougall and Oviatt, 1996). New knowledge and capabilities need to be acquired or developed to successfully enter the new markets (Lu and Beamish, 2001). Foreign newcomers find it difficult to acquire, substitute or imitate this knowledge because it is largely tacit and causally ambiguous (Barkema and Bell, 1996; Jensen and Szulanski, 2004).

#### 2.3.7.2 Liability of smallness

Firm size has often been selected as an explanatory variable for export behaviour (Denis and Depelteau, 1985; Cavusgil and Naor, 1987). The notion of **liability of smallness** originates from the idea that small firms do not perform as well as large firms and have higher failure rates. Small enterprises face difficulties directly associated to their size such as having fewer financial resources, limited access to information about foreign markets and lack of ability to process it, lack of qualified human resources to conduct foreign business development work, higher administrative costs, legitimacy problems with external stakeholders, and limited bargaining power *vis-à-vis* potential business partners and foreign governments (Aldrich and Auster, 1986; Brüderl and Schüssler, 1990; Baum and Oliver, 1992; Baum and Oliver, 1996; Poon and Swatman, 1999).

In comparison with small firms, large firms are less dependent on external resources of funding (Baum and Oliver, 1996), and more likely to develop market power (Bain, 1956). The liability of smallness suggests that size matters to business success and expectations of success are higher

for large firms than for small ones. Several researchers (Hannan and Freeman, 1984; Freeman *et al*., 1983; Sutton, 1997) have reported that the mortality rate declines with firm size.

Using the notion of industry life cycle, Agarwal *et al*. (2002) argue that the liability of smallness is less determinant of firm survival during the mature stage of an industry than during the growth stage. The reasoning behind this statement is that in mature industries the competition dynamics force large concentrated firms compete against each other, leaving small, specialized firms to strive for niche markets. This reduces the incentives for small firms to grow.

The notion that size matters takes particular relevance when the firm embarks in the internationalization of its operations, and the relationship between firm size and export performance has been widely studied in the literature (Aaby and Slater, 1989; Mugler and Miesenbök, 1986; Bonaccorsi, 1992; Calof, 1994). The reasons why it could be reasonable to believe that size has a positive impact on export performance are closely related to a number of clearly identified factors (Bonaccorsi, 1992; Calof, 1994). Those factors are:

1. *Lack of adequate resources and capabilities:* Small enterprises tend to have fewer resources available to develop new products and/or production capabilities. They usually lack qualified personnel with sufficient experience in international transactions able to conduct a proper planning of international operations and to handle export documentation properly. The lack of resources prevents the small and medium sized enterprise to fully exploit opportunities in foreign markets (Jarrillo and Martínez, 1991; Bradley, 1995).
2. *Lack of economies of scale:* There are mainly two areas where economies of scale could arise within the exporting firm: in the production area where the firm must reach an *optimum plant size* to minimize unit costs, and in the international marketing activities where a *critical mass* of sales is needed to minimize costs. Research shows that firm size is an important determinant of the degree of adoption and standardization of the *marketing mix*[11] elements (Myers and Cavusgil, 1996; Chung, 2003 and 2005; Sousa and Bradley, 2008). Chung (2003) shows that larger firms are more likely to standardize their marketing programmes across the markets in which they operate. The larger the firm,

[11] The *marketing mix*, often referred to as *The Four Ps*, is a set of tactical marketing tools developed in the second half of the past century when mass marketing was a viable option for enterprises. The marketing mix refers to *product*, *price*, *place*, and *promotion*.

the higher the chances it employs a well-structured marketing strategy to address local and international competition (Sorenson and Wiechmann, 1975).

3. *Management attitudes*: For some authors (Bilkey and Tesar, 1977; Bilkey, 1978; Lee and Brasch, 1978, Cavusgil, 1982; Cavusgil and Goodiwalla, 1982, Miesenböck, 1988, Aaby and Slater, 1989, Louter *et al*., 1991) the manager of the small and medium sized enterprise is the key variable for the internationalization of the firm. Higher levels of internationalization seem to be associated with higher levels of manager's formal education and international experience (Cavusgil, 1982; Barret and Wilkinson, 1986, Mugler and Miesenböck, 1989; Dichtl *et al*., 1990). Manager's objective (e.g. education level, experience, knowledge of foreign languages, achievement of firm's objectives, etc.) and subjective (e.g. personal motivations, attitudes, expectations about exporting, risk aversion, etc.) characteristics have a very strong impact on the internationalization process of a small and medium sized enterprise. When it comes to the decision of internationalize or not, these characteristics are sometimes more important than any other factors related to the firm's endowment of resources and capabilities (Reid, 1980 and 1981; Dichtl *et al*., 1984a, 1984b, and 1990; Veciana and Genescà, 1994).

   It has been proved that the more rational and formalized the decision making process for exporting, the higher the export intensity of the firm (Cavusgil and Goodiwalla, 1982). When management perceives that exporting would help achieve firm objectives such as growth and/or profitability, internationalization efforts seem to be more successful (Simpson and Kujawa, 1974; Cavusgil *et al*., 1979; Cavusgil and Nevin, 1981; Cavusgil, 1984b.).

   Lack of information and experience in international markets, together with the fact that due to the small size of the firm, any mistake in the internationalization process may have serious long lasting implications for the firm, make SME managers develop higher levels of risk aversion and the perception that they are not ready to take on the challenge of internationalization (Cavusgil, 1984b, Axinn, 1988; Eshghi, 1992; Bradley, 1995). Bilkey (1978) suggest that there is a direct relationship between firm size and the quality of its management.

4. *Firm growth in the domestic market*: Several authors considered that the bigger the domestic market-share of the firm, the larger the probability that the firm would export (Bilkey and Tesar, 1977; Cavusgil *et al*., 1979; Roy and Simpson, 1981). Enterprises with smaller market-share would first expand their activities in the domestic market before attempting any effort to internationalize their activities (Wiedersheim-Paul *et al*., 1978; Welch and Wiedersheim-Paul, 1980; Axinn, 1988; Calof, 1994).

De Chiara and Minguzzi (2002) suggest that size is not restraining the international competitiveness of small firms and that sales abroad are not affected by firm size. They do however point out that due to structural handicaps such as limited financial resources, SMEs cannot enjoy all options in the internationalization process. Moreover, some country specific factors may also hinder the internationalization of small firms. Because small firms are facing diseconomies of scale, the specialization of skills cannot reach a certain threshold. The main obstacles to internationalization of small firms are in the limited internal resources and capabilities, and thus not outside the firm.

Empirical evidence shows that there is a positive relationship between firm size, measured by the number of employees, and export activity (Tookey, 1964; Reid, 1982, Cavusgil and Naor, 1987, Mugler and Miesenböck, 1989). Similar positive relationship is found when annual sales are used as a proxy for firm size (Cavusgil and Nevin, 1981; Christensen *et al*., 1987; Piercy, 1981; Cavusgil, 1984a; Calof, 1994). What is still a matter of debate is whether there exist a constant linear relationship between firm size and export activity, or on the contrary, the relationship is only valid at the initial levels of internationalization when the firm needs to reach a minimum size in order to be able to export, and after that minimum size is reached the relationship vanishes as the firm grows (Cavusgil *et al*., 1979; Cavusgil, 1984b; Gremünden, 1991).

#### 2.3.7.3 Liability of newness… and adolescence

Stinchecombe (1965) introduced the concept of a **liability of newness** to explain the high mortality risk facing new ventures relative to their more mature counterparts. Liability of newness could be described as the greater risk of failure new businesses face when compared with older organizations, and it could be caused by the fact that:

- New roles, routines and processes need to be learned, developed and implemented. Due to the difficulty of creating new effective and efficient routines and management structures, younger firms face serious difficulties to effectively compete against establish organizations (Nelson and Winter, 1982). According to this argument, the high rate of failure of new firms is a direct consequence of the high costs of learning new routines and processes, in other words, the cost of developing capabilities is higher for younger firms.

- New businesses have weaker networks and rely on social relations with strangers, making them highly vulnerable to environmental shocks (Hannan and Freeman, 1989) and hampering its access to resources.
- New businesses do not have relationships of trust, which implies low levels of legitimacy *vis-à-vis* its suppliers and its clients. As Shapiro (1982) pointed out, when there is some degree of uncertainty concerning an enterprise or a product offering, clients tend to base their judgments on reputation levels. Given the fact that reputation relies on past levels of product offering quality, new businesses do not possess such a reputation. Hannan and Freeman (1989) identify the lack of customer trust originated in organizational stability as one of the reasons for high mortality risks of new businesses.
- New businesses may also lack knowledge about what they can do or should do (Jovanovic, 1982).
- New firms' resource endowments may not be sufficient to execute their strategy (Lussier, 1995; Venkataraman *et al*., 1990).

Agarwal *et al*. (2002) analyse the liability of newness from an industrial organization angle and argue that this liability is directly related to the life cycle of the industry in which it operates. According to the authors the liability of newness varies according to the stage of the industry life cycle, and it is less of a liability during the growth stage of an industry than during the mature stage. The growth stage is characterized by high uncertainty about markets, technologies and routines, and high innovative activity. The reason why the liability of newness is less of a problem during the growth stage is because "*the source of information critical to generating the innovative activity during this phase lie outside routines practiced by incumbent firms*" (Agarwal *et al*., 2002).

Even though the discussion around the liability of newness could be better framed under the firm life cycle theory, it is also possibly to apply its postulates to the theory of internationalization of the firm. The main proposition of the IE model states that internationalization is an act of entrepreneurship, therefore a business that gives its first steps towards internationalization could be considered as a new business. In the context of a newly internationalized business, the liability of newness would refer to the reasons why a firm may underperform in realizing the benefits inherent in international expansion. These businesses would be relatively inexperienced in the new market and would face difficulties in accessing local resources and existing local networks. In other words, businesses that initiate international

operations face the same difficulties in the foreign market, than those faced by locally newly created businesses, even if they are long established in their national markets.

To support this previous argument Contractor *et al*. (2003) affirm that "*early internationalizers have large learning costs because of unfamiliarity with foreign markets, cultures and environments*". Lu and Beamish (2004) argue that this liability of newness may have financial performance implications for enterprises: "*at the initial stages of international expansion (phase 1), a firm encounters liabilities of newness and foreignness in which it must pay some "tuition" in the form of reduced profits resulting from such disadvantages*". Newly internationalized firms have to face and find solutions for the complexities of adapting organizational structures, systems, processes and mental maps, originally developed to address local market needs, to fit the international setting (Bartlett *et al*., 1989; Vermeulen and Barkema, 2002). Eriksson *et al*. (1997) refer to these difficulties as lack of "*internationalization knowledge*", that is, the knowledge required to deal with additional coordination, communication and complexities embodied in dispersed cross-border business. It also refers to the capability to modify and adapt valuable resources to fit new market environments (Vermeulen and Barkema, 2002), and how to understand as well as handle the demands of foreign countries' institutional environments (Cuervo-Cazurra *et al*., 2007).

Closely related to the notion of liability of newness is that of **liability of adolescence** (Levinthal and Fichman, 1988; Brüderl and Schüssler, 1990; Ingram, 1993). Both perspectives agree in their prediction that the early years of a firm's life are the most crucial and hazardous, and failure rates eventually decline with age; however, they differ in relation to whether firms are most likely to fail at founding or several years later (Henderson, 1999). While the liability of newness suggests that failure decreases monotonically with age the liability of adolescence argues that "*organizations can survive for a time with little risk of failure because they can draw on the initial stock of assets they typically acquire at founding*" (Henderson, 1999). As a result of this "initial honeymoon period", firms face their highest mortality rates several years after their births (Brüderl and Schüssler, 1990; Fichman and Levinthal, 1991). It is then, after those resources are consumed and the firm has been unable to develop its routines processes and capabilities, build a good reputation in the market, and secure new resources, that the firm would inevitably disappear.

The notion of liability of newness has found support in empirical research. Carroll (1983) found that organizational death rates decline with firm age, and Phillips and Kirchoff (1989) found that three out of five new firms fail within their first six years. Despite the intuitive appeal of the

notion that resource endowments generate an initial honeymoon period empirical evidence supporting the liability of adolescence is relatively weak.

#### 2.3.7.4 Liability of complexity

The concept of liability of complexity was first introduced by Zucchella and Servais (2012). As the authors point out, the nature of this liability is subjective as it depends on the experience, perceptions and propensity to face uncertainty and pursue strategic opportunities of the management team. Managers are believed to have a mental map of foreign markets based on subjective and objective factors, and that markets are classified according to their level of complexity. Market complexity is independent of available information as is the case pf psychic distance, and depends on effective market access. Penetration of complex markets may require highly committed entry modes (e.g. foreign direct investment) that are not common to SMEs due to their resource and capability limitations.

Market complexity originates from five factors that are sources of costs and uncertainty. Three of those factors are related to lack of adequate knowledge and understanding of the markets (i.e. heterogeneity and dynamism of demand; geographical and cultural complexity; and institutional complexity), and the remaining two factors are linked to barriers to access markets and customers (i.e. customer service and distribution channels; and local competitiveness).

#### 2.3.7.5 Liability of outsidership

The concept of liability of outsidership was first introduced by Johanson and Vahlne (2009) when the authors revisited the Uppsala model to take into account the developments in the international economy, notably the development of relationships and networks. According to the authors, outsidership, in relation to the relevant network, more than psychic distance, is the root of uncertainty constraining international expansion.

The current market environment is dominated by enterprises linked to each other by a complex network of relationships. Being part of relevant networks is necessary for successful internationalization as they offer enormous opportunities for learning and for building trust and commitment, both of which are necessary preconditions for internationalization. This view is supported by earlier work on network-led internationalization (Coviello and Munro, 1995 and 1997; Welch and Welch, 1996; Martin *et al.*, 1998).

### 2.3.8 An integrative view of SME's internationalization difficulties

Irrespectively of the type of liability, it seems clear that many of the problems associated with foreignness, smallness, newness, complexity and outsidership are common to all liabilities. Using the framework of resources and capabilities to classify those problems the following box organizes liabilities in four categories.

***Box 9: Categories of SME problems***

***1. Problems related to resource endowments***

The lack of access to adequate resources seems to be a constant along the aforementioned liabilities. In particular lack of access to *information* about clients, competitors, and the industry, and the inability to create and/or join *networks* seems to be predominant in every case. Lack of *non-physical assets* such as reputation, credibility and legitimacy also plays a very important role. Newly internationalized SMEs also have problems to acquire *financial resources* and *human resources* of sufficient quantity and quality to conduct international operations.

***2. Problems related to operational capabilities***

When it comes to capabilities there seems to be a number of recurrent shared weaknesses that relate to the lack of adequate roles, routines and processes to serve the foreign market. The newly internationalized SME is likely to be weak in terms of its marketing capabilities and its ability to handle foreign orders. These firms tend to be also weak in terms of their production capabilities, and in particular in their ability to develop new products and/or to adapt existing products to the needs of foreign clients. They would show higher administrative costs which would result in lower levels of effectiveness and efficiency.

***3. Problems related to dynamic capabilities***

Newly internationalized SMEs tend to present certain weaknesses related to their dynamic capabilities. Those weaknesses are clear in two fronts: First, the firm's ability to properly manage its resources to ensure that they are able to support the firm's strategy at all times. Second, these type of SME seem to be very week *vis-à-vis* their strategic competence, and in particular in their ability to identify foreign markets suitable in light of the firm's resources and capabilities.

***4. Problems related to management attitudes vis-à-vis internationalization***

This is a problem that is usually solved as the firm grows and gains experience, as it is usually related to the lack of confidence, knowledge, and information, as well as the perception of risk of international operations.

## 2.4 Chapter summary

The following box attempts to provide a quick summary of the most salient topics that were discussed in this chapter.

***Box 10: Summary of chapter 2***

Firms grow not because of advantages associated to firm size, but rather as a natural consequence of the manager's ability to identify combinations of resources and capabilities that generate profitable growth opportunities.

The extent to which the manager is able to identify and exploit different growth opportunities is linked to the manager's subjective assessment of the firm's capabilities and resources. Given the subjectivity of the assessment, two firms operating in the same market with the same set of resources, may be able to identify different opportunities and may generate different services from the same resource endowment. One way to widen the manager's ability to identify new business opportunitiesi is by growing the stock of knowledge and improving the processes to manage this resource.

Internationalization is seen as an important way of securing the firms' survival and growth. It is generally agreed that firms entering foreign markets need to step away from existing routines and create new ones in order to deal with higher levels of risk and uncertainty. This requires substantial resource commitments in terms of time, financial resources, the establishment of new relationships, and the hiring of additional personnel.

Two frameworks have received preferential attention when studying the internationalization of SMEs: the Uppsala model and the international entrepreneurship model. Both models could be seen as special cases of a more general setting affected by market dynamism and internal characteristics of the firm. While the typical firm fitting the Uppsala model paradigm is a firm that is fearful that a premature entry into foreign markets would threaten its survival, the typical firm in the IE model is one that is concerned about missed opportunities for growth due to hesitation to enter foreign markets. If we assume relatively stable markets and a high level of "relative ignorance" (in terms of information, know-how and capabilities) at the onset of the firm's operations, then the Uppsala model is the one that best explains the internationalization process of the firm. On the contrary, if managers and employees bring high levels of international operations expertise to the firm at the moment of its creation, and the firm operates under a dynamic market structure, then the IE model is the one that explains reality in a more adequate manner.

SMEs find it difficult to internationalize their activities not only because they have limited resources and capabilities, but also because they have to face a number of liabilities associated to their size.

# CHAPTER 3: KNOWLEDGE MANAGEMENT, THE CRITICAL DYNAMIC CAPABILITY

## 3.1 Knowledge and knowledge management capability

The review of the literature on dynamic capabilities, business internationalization and business growth has shown the importance of knowledge and its management. In line with these findings, knowledge management seems to be a critical factor in the development of competitive advantage. It is then important to take a closer look to fully understand what we are dealing with.

### 3.1.1 Knowledge

The relevance of knowledge is becoming increasingly critical in business as we transition from an industrial era into an information and knowledge era. Nowadays, knowledge is increasingly considered to be the most important of all firm's resources (Carneiro, 2000) as it is generally placed at the heart of sustained competitive advantage (Gold *et al*., 2001; Beveren, 2002). Knowledge is embedded in multiple entities within the firm, such as the organizational culture, routines, policies, systems, and documents, as well as in individuals and teams (Nelson and Winter, 1982; Grant, 1996b; Spender, 1996; Crossan *et al*., 1999). Knowledge shapes the firm's competences (Prahalad and Hamel 1990) and therefore determines value creation (Grant, 1996b).

To compete effectively, companies must leverage their existing knowledge and create new knowledge that favourably positions them in their chosen markets. In line with the RBV, valuable and knowledgeable employees as well as high stocks of knowledge are not sufficient to outperform competitors. These resources should be managed, put to use, and controlled in a way that enables the business to implement its desired strategy (Barney, 1991). Along the same lines Cohen and Levinthal (1990) argue that businesses should develop the ability to use existing knowledge in order to recognize the value of new information, assimilate it, and apply it to create new knowledge and capabilities. Grant (1996b) argues that the creation of knowledge is less important than the effective and efficient utilisation of knowledge. Thomas *et al*. (2001) noted that performance differences across firms may be attributed to differences in knowledge and the implementation of knowledge management processes. It is therefore important to understand what knowledge is before we could embark in understanding knowledge management processes, and its effects on firm internationalization and growth.

The ongoing discussion about defining knowledge and related terms is a sign of both the complexity of this topic and the various different viewpoints from where the issue can be

approached. Knowledge is commonly referred as information in action, as a set of justified beliefs that enhance an entity's capability to take effective action, and as information applied for a purpose. All these definitions conceive knowledge as context-specific. Table 12 presents some interesting definitions of knowledge.

***Table 12: Definitions of knowledge***

| Authors | Knowledge definitions |
|---|---|
| Wiig (1994) | Truths and beliefs, perspectives and concepts, judgments and expectations, methodologies, and know-how |
| Nonaka and Takeuchi (1995) | A dynamic human process of identifying a justified true belief |
| Stein and Zwass (1995) | Collection as concrete experiences |
| Pentland (1995) | The product of an ongoing set of practices embedded in the social and physical structures of organization |
| Liebeskind (1996) | Information of which validity has been established through tests of proof |
| Ruggles (1996) | A fluid mix of framed experience, value, contextual information, and expert insight |
| Albert and Bradley (1997) | Information combined with experience, context, interpretation, and reflection. It is a high-value form of information that is ready to apply to decisions and actions. |
| Spek and Spijervet (1997) | The whole set of insight, experience, and rules which are considered correct and true and which guide the thoughts, behaviour, and communication of people |
| Allee (1997) | Experience or information that can be communicated or shared |
| Sveiby (1997) | The capacity for effective action |
| Davenport and Prusak (1998) | A fluid mix of framed experiences, values, contextual information, and expert insights that provide a framework for evaluating new experiences and information. |
| Fahey and Prusak (1998) | Data and information with decision- and action-relevant meaning |
| Leonard and Sensiper (1998) | Relevant, actionable information based at least partially on experience |
| Wijnhoven (1998) | Collection of concrete experiences or a set of abstract conceptualizations |
| Den and Huizenga (2000) | A collection of rules and information to fulfil a specific function |
| Raisinghani (2000) | Formatted information |

*Source: Own work*

Nonaka and Takeuchi (1995) distinguish between tacit and explicit knowledge. *Tacit knowledge* refers to knowledge which draws on the accumulated experience and learning of a person, it is embedded in the human mind and is difficult to express through mere verbal instruction. Tacit knowledge is described as insights, intuitions, and hunches developed through experience, and

hard to formalize. Since tacit knowledge is difficult to codify, it is passed along to others through direct experience (Polanyi, 1973; Reed and De Filippi, 1990). Tacit knowledge is sometimes termed subjective knowledge, personal knowledge, or procedural knowledge. As Lubit (2001) point out, there are four categories of tacit knowledge: 1) Hard to pin down skills (know-how); 2) Mental models that show us how the world is constructed, which elements are central, and how the parts are related; 3) Ways of approaching problems that mostly derive from habit and the mental patterns we develop when we see how others think through problems; and 4) Organizational routines which is where much of the tacit knowledge of a firm is stored. *Explicit knowledge* on the contrary refers to formalised, codified, and systematized knowledge. Explicit knowledge is often gained through formal education and training programs, and could take the form of knowledge recorded in a video, written in a document, or in other available support systems. Explicit knowledge normally covers part of the stock of tacit knowledge but only in rare circumstances it is a complete representation of it. Sutton (2001) noted that explicit knowledge is not sufficient to impact the bottom line of the business; yet, explicit knowledge remains relevant to firms as it is easily transferred (Kogut and Zander, 1992). Hildreth and Kimble (2002) emphasised the importance of combining tacit and explicit knowledge in delivering positive results for the organisation.

Despite being probably the most cited taxonomy of knowledge, Nonaka and Takeuchi's is not the only one. The table below shows other taxonomies for knowledge.

***Table 13: Taxonomies of knowledge***

| Authors | Classification |
|---|---|
| Boisot (1987) | Codified, not coded, diffused, undiffused knowledge |
| Blackler (1995) | Encoded knowledge, embedded knowledge, embrained knowledge, encultured knowledge, and embodied knowledge |
| Leonard-Barton (1995) | Scientific, Industry specific, Firm specific |
| Ruggles (1996 and 1998) | Process, catalogues, and experiential knowledge |
| Quinn *et al*. (1996) | Cognitive knowledge, advanced skill, systems understanding, and self-motivated creativity |
| Demarest (1997) | Scientific, philosophical, and commercial knowledge |
| Fleck (1997) | Formal knowledge, contingent knowledge, informal knowledge, meta knowledge, tacit knowledge, and instrumentalities |
| Probst (1998) | Individual and collective knowledge |
| Schuppel *et al*. (1998) | Inner/outer, Actual/future, Explicit/implicit, Experience/rationality |
| Pan and Scarbrough (1998) | Factual, Behavioural |
| De Long and Fahey (2000) | Human, social, and structured knowledge |
| Housel and Bell (2001) | Label, process, skill, and people knowledge |

*Source: Own work*

Knowledge has certain characteristics that make it unique and difficult to manage:

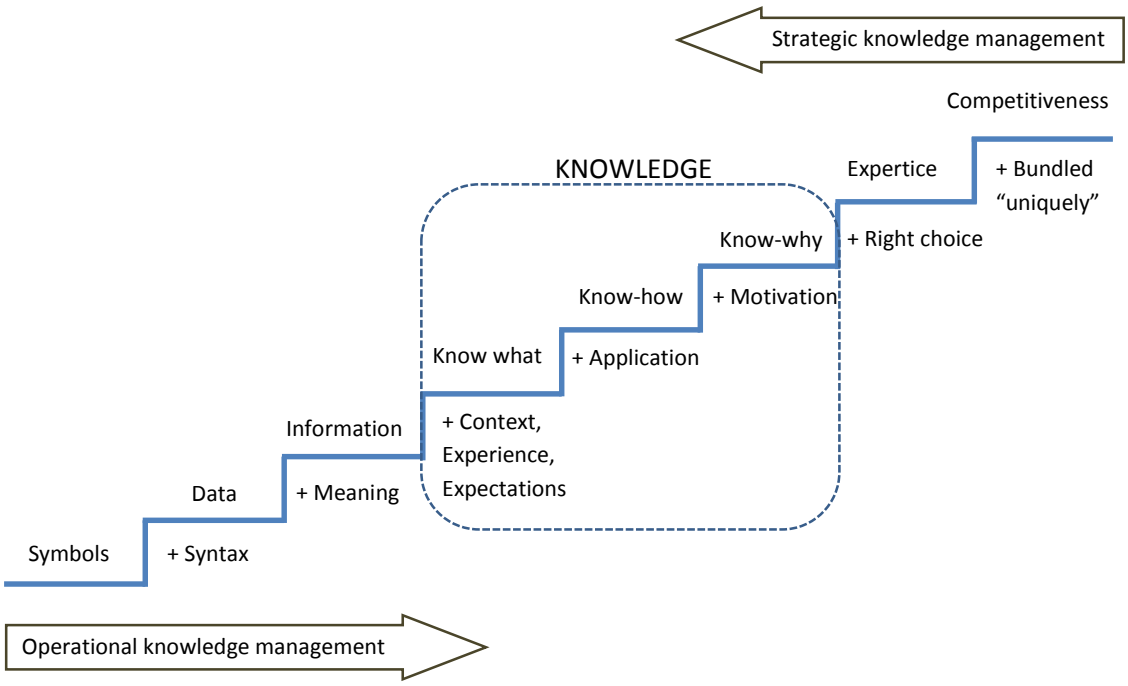
- Knowledge is intangible and difficult to measure (Wiig *et al*., 1997);
- Knowledge is volatile and can disappear overnight (Wiig *et al*., 1997);
- Knowledge tends to be specific in the sense that knowledge is structured and relevant for a particular context and/or environment (Nelson and Winter, 1982);
- Knowledge is disperse in all corners of the organization (Weick and Roberts, 1993);
- Knowledge can be transferred between and within the firms (Grant, 1996a);
- Knowledge tacitness is the extent to which knowledge neither expressed nor declared openly but rather implied or simply understood and is often associated with intuition (Takeuchi and Nonaka, 1995);
- Knowledge is most of the time embodied in agents with will (Wiig *et al*., 1997);
- The ability to process knowledge is usually referred to as "absorption" or "reception" (Cohen and Levinthal, 1990);
- Knowledge could be potentially very complex, making it difficult to understand (Dierickx and Cool, 1989; McEvily and Chakravarthy, 2002);
- Knowledge is not consumed in a process and sometimes increases through use (Wiig *et al*., 1997); and
- Knowledge is not subject to rivalry as it can be used by different processes at the same time for different purposes (Wiig *et al*., 1997).

In order to properly manage it, managers should clearly understand what knowledge is and how it is related to the competitiveness of the business. Figure four below shows an adapted version of Kubr's (2002) competence ladder and explains how knowledge is originated and how it contributes to the business operations and results.

Starting from the bottom left, we see that people communicate by means of symbols that could take the form of letters, numbers or signs. These symbols can be interpreted when there are clear rules of understanding commonly shared. These rules are called syntax, therefore when symbols are structured following syntactic rules they become data. Data is raw unanalysed facts, typically measures or attributes of a phenomena, which are out of context and have no relation with other facts (Robbins *et al*., 2000; Zikmund, 2000). These data can only be interpreted if they are given an exact meaning. Data that is given a meaning by linking it to a specific area of expertise is transformed into information. Information is nothing but analysed and processed data viewed in a context that defines the relationship between two or more pieces of data and

presented in a format suitable for decision making (Robbins *et al*., 2000; Zikmund, 2000). This information will be interpreted differently according to the context, the experience and expectations of people receiving and using it. While information is data organized in a meaningful manner, knowledge refers to the tacit or explicit understanding of people about relationships among phenomena. It is embodied in routines for the performance of activities, in organizational structures and processes and in embedded beliefs and behaviour. Knowledge implies an ability to relate inputs and outputs, to observe regularities in information, to codify, make casual associations, explain and ultimately to predict (Tiwana, 2002).

***Figure 4: The expertise ladder***




*Source: Adapted from Kubr (2002)*

In the development of knowledge different levels can be distinguished. The first, "know what", is a result of internalizing information. This will increase the value of a firm only if an individual is able to apply the information, that is, to transform "know what" into "know-how" by means of application. The ability to apply knowledge is based on specific motivations ("know why"). People will only act if they are motivated. Therefore, an important management task to enhance knowledge based value creation is to ensure the right motivational set-up so that workers develop, share, and apply their knowledge in line with the objectives of the business. Value is created when the right knowledge is applied at the right moment to solve a specific problem or to exploit a new business opportunity. The right choice of knowledge at the right moment

generates expertise. Business expertise shaped and bundled in a way that is not matched by other organizations results in competitiveness.

### 3.1.2 Knowledge and dynamic capabilities

Spender and Grant (1996) argued that sustaining competitive advantage depends on the firm's knowledge and the ability of others to replicate that knowledge. Several authors have highlighted the importance of knowledge as a resource to create added value within the business (Grant, 1996b), as long as that knowledge is unique, difficult to transfer and to duplicate (Kogut and Zander, 1992; Grant, 1996a and 1996b). Nelson (1991) argued that "*capabilities will be defined and constrained by the skills, experience, and knowledge of personnel*". Knowledge management allows a firm to create, communicate, and apply knowledge of all kinds to achieve business objectives (Albert and Bradley, 1997).

Zollo and Winter (2002) studied the role of experience accumulation, knowledge articulation and knowledge codification in the development of dynamic capabilities, and conclude that dynamic capabilities are shaped by the co-evolution of these learning mechanisms. In an aim to establish the conceptual link between knowledge management and dynamic capabilities Easterby-Smith and Prieto (2008) developed a framework where organizational learning, knowledge infrastructure and the trade-off between knowledge exploration and exploitation, are the common topics covered by both theoretical domains. Nielsen (2006) argues that knowledge management processes that change, renew and exploit knowledge could represent knowledge related dynamic capabilities of the firm.

Grant (1996a and 1996b) argues that the business' ability to integrate knowledge is the most important aspect of capability development within the firm, and by doing so shifts the focus of attention from knowledge itself to knowledge creation and the integration mechanisms. The reasons for this is that ability constraints limit and prevent individuals from integrating external knowledge, and that the market for knowledge is imperfect when explicit knowledge is difficult to price, and tacit knowledge is hardly transferable.

Chuang (2004) defines a firm's knowledge management capability as its ability to mobilise and deploy knowledge management based resources in combination with other resources and capabilities. Existing business capabilities and resources are therefore the basis for the creation and integration of individual's knowledge inside the firm. Knowledge management processes create flows to and from the firm's stock of knowledge, not only generating new knowledge but

also altering the stock of other resources and the way capabilities are developed and deployed. In that sense, existing organizational routines, learning and knowledge management processes guide the development, evolution, and use dynamic capabilities (Eisenhardt and Martin, 2000).

Because knowledge is the cornerstone of resources and capabilities, competitive advantage depends on the speed at which businesses can generate, capture, and disseminate knowledge, and use it to develop new resources and capabilities that competitors cannot easily imitate (Sharkie, 2003).

## 3.2 Knowledge and firm growth

The theoretical link between knowledge and growth was first proposed by Penrose (1959). She argued that it is the ability to create knowledge what helps to explain the firm's ability to grow. As she mentioned it in the foreword to the 1995 edition of her book: "*[T]he growing experience of management, its knowledge of the other resources of the firm and the potential for using them in different ways, create incentives for further expansion as the firm searches for ways of using the services of its own resources more profitably*".

Penrose's view of the firm was that of an administrative unit with boundaries, and her model of firm growth is essentially an evolutionary process which involves accumulation of knowledge. Operations are organized and sustained inside the firm as a result of the manager's capacity to mobilize, deploy and exchange resources. As employees learn to overcome the challenges imposed by the business operations and interactions with the environment, they learn, acquire competences, and build up the firm's resources. These resources could be tangible assets such as productive equipment and buildings, or intangible assets such as expertise, knowledge and reputation.

Central to Penrose's growth theory are the *adjustment costs of growth* and the *productive opportunity set* facing the firm. The adjustment costs of growth only affect those firms that have been able to identify and exploit a growth opportunity, and consist of the time and effort required to integrate new managers and operations, and to learn new routines when the business expands its activities. The identification and exploitation of growth opportunities is linked to managers' subjective assessment of their productive opportunity set, which is influenced by the resources of the firm, particularly by its knowledge base. Knowledge provides firms with a platform for proactively pursuing opportunities and taking entrepreneurial actions (Sapienza *et al*., 2006; Yli-Renko *et al*., 2002). Along the same lines, the KBV emphasizes the

importance of knowledge acquisition for the enhancement of a firm's growth prospects (Grant, 1991b). The cornerstone of Penrose's theory is the fundamental assumption that growth is limited by the firm's productive opportunity set, which comprises all of the productive possibilities that entrepreneurs can see and take advantage of. Penrose viewed people as being the most important resource on any business, as it is their knowledge and insights that are instrumental to determine the future productive opportunity set of the firm. Despite having done this, she did not elaborate on the importance of knowledge inimitability nor the intentionality involved in knowledge creation processes to shape the business environment and to create new markets.

Along the same line of reasoning, Laursen *et al*. (1999) argue that firm growth is determined by the firm's knowledge structure and evolution, and suggest focusing on the dynamics of change in knowledge structures in order to understand firm growth. Kogut and Zander (1996b) argue that "*what a firm has done before tends to predict what it can do in the future*"; and the firm's future expansion is determined by the knowledge accumulated. Furthermore, Grant and Baden-Fuller (2004) believe that "*Knowledge is the overwhelmingly important productive resource in terms of market value and the primarily source of Ricardian rents*". Bessant *et al*. (2005) and Phelps *et al*. (2007) propose a framework that links together the notion that growing firms face problems and crises - tipping points (Gladwell, 2000) -, and that the firm's ability to use and process knowledge - absorptive capacity (Cohen and Levinthal, 1990) -, will determine the firm's growth path.

As Pitelis (2009) points out, Penrose considers the multinational firm as the natural outcome of the very pressures for growth, but she did not explore in any detail the implications of her theoretical contributions for the growth of the internationalizing firm. In her own words: "*There are differences between national and international firms but the differences are not such as to require a theoretical distinction between the two types of organization, only a recognition that national boundaries make an empirical difference to their opportunities and costs*" (Penrose 1987). Later, in the 1995 preface to the third edition of *The Theory of the Growth of the Firm*, she went on to argue that: "*Much of the analysis of the growth of firms as I have presented it seems by and large to apply equally well to expansion by direct foreign investment in its modern form - the processes of growth, the role of learning, the theory of expansion based on internal human and other resources, the role of administration, the diversification of production, the role of merger and acquisition are all relevant*".

## 3.3 Knowledge and the internationalization of the firm

The case for knowledge as a critical element in the internationalization of the firm is probably the easiest to present, as research on firm internationalization also assigns knowledge a special place in the ranking of factors for success in international markets. Over the last few years, there has been widespread interest among scholars in the importance of knowledge management in organizations and, particularly, in multinational firms (Ghoshal and Bartlett, 1988; Zander and Kogut, 1995; Gupta and Govindarajan, 2000; Schulz, 2001 and 2003; Eisenhardt and Santos, 2002). The notion that multinational firms create value from the internalization of their stock of knowledge and from their intangible assets such as patents, trade secrets, and organizational routines, can be traced back to the pioneering work of Hymer (1960), Caves (1971), and Buckley and Casson (1976) among others. Some studies suggest that firms compete internationally based on their dynamic capacities, and in particular, based on their ability to learn and apply knowledge to foreign markets (Chang and Rosenzweig, 2001; Luo, 2002; ; Tallman and Fladmore-Linquist, 2002; Sapienza *et al*., 2006). The internationalization of the business conceived as a process of organizational learning and knowledge accumulation is nowadays a common place among business researchers (Eriksson *et al*., 2000; Eriksson and Chetty, 2003; Ruigrok and Wagner, 2003; Prashantham, 2005; Hsu and Pereira, 2008).

The link between knowledge and firm internationalization has been a recurrent theme since the late seventies when the Uppsala model was originally presented. This model predicts that the moment to initiate the internationalization, its speed, sequence, and the selection of target markets are subject to the firm's acquired experience, information and know-how. As Steen and Liesch (2006) point out, international expansion is not simply "*a process of learning about markets but, also, it is a process of learning about the firm's own internal resources*", suggesting that internationalizing firms need to develop specific capabilities to manage the resources under their control. This way, the conventional view of gradual internationalization resulting from accumulation of experimental learning about foreign markets is complemented with a Penrosean perspective by which (dynamic) capabilities drive the quest for new productive opportunities, the design of new internal processes, and ultimately affect the firm's international growth pattern.

### 3.3.1 Knowledge for internationalization: A typology

Given that this research work focuses on the firm's growth through internationalization, it is important to understand how the issue of knowledge has been addressed in the literature when discussing the firm's internationalization strategy. According to the Uppsala model the knowledge that is relevant for business internationalisation process is the one that explains how to conduct businesses in the target market (e.g. knowledge of customers, competitors, suppliers, regulatory authorities, and alternative market penetration, establishment and exploitation modes). The model also makes a distinction between *objective market knowledge* that can be taught and *experimental market knowledge* that can only be learnt through personal experience. The latter takes a predominant role in the model as the key regulator of resource commitments to foreign markets. While experimental market knowledge is acquired through learning by doing making it unique to the firm and difficult to replicate and transfer; objective market knowledge is acquired through standardised information collection methodologies, and it takes the form of an easily transferable public good. Objective market knowledge plays a secondary role in the explanation of firm's internationalization.

Furthermore, experimental market knowledge could be split in *general knowledge*, defined as certain marketing methods and common characteristics of certain types of customers; and *market specific knowledge* defined as knowledge about characteristics of the specific market and specific individual customer. A natural corollary of the market specificity of knowledge is that since markets differ from each other, knowledge acquired in one market is transferable only to a limited extent to another market.

Eriksson *et al*. (1997) extend the knowledge concept by separating market specific knowledge into three categories. Later, Johanson and Vahlne (2009) added a fourth category when analysing how networks could facilitate internationalization.

a) *Internationalization knowledge*, defined as experimental knowledge about the firm's capabilities and resources to expand on new markets. This knowledge represents the competence accumulated by the firm and knowledge carried by managers and employees who manage and take part in international activities (i.e. general knowledge stemming from the experience of entering or expanding on new markets). Autio *et al*. (2000) argue that the rapid international expansion of entrepreneurial firms is due to their large stocks of international knowledge. Some authors (Knight and Liesch, 2002) believe that because of its difficulty to obtain and to reproduce, tacit

internationalization knowledge provides a competitive advantage for the internationalizing firm. It is the knowledge that could be transferred from market to market the one that has an influence on information search processes and evaluation of opportunities; this knowledge could then be applied by firms to expand geographically, leading to strategic market entry decisions. Nowadays it is commonly agreed (Eriksson *et al*., 1997; Welch and Luostarinen, 1988; Johanson and Vahlne, 1990; Forsgren, 2000) that firms wishing to internationalize their activities would not only need knowledge about the specific target market, but also about other aspects relevant for the internationalisation of business operations.

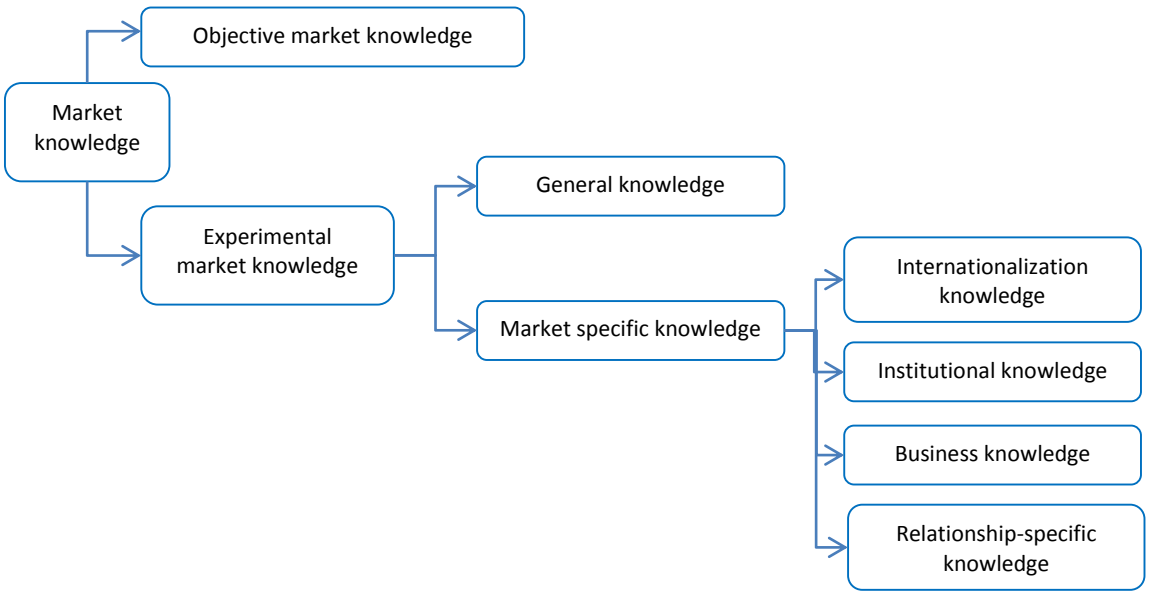
b) *Institutional knowledge*, refers to knowledge about local business counterparts and their relations, as well as knowledge about local institutional conditions (i.e. knowledge about corporate goals and strategies, organizational culture and organizational routines and know-how about the organizations active in the market).

c) *Business knowledge* defined as knowledge about customers, the market and competitors.

d) *Relationship-specific knowledge* includes knowledge about other network members, their heterogeneous resources and capabilities. This knowledge is developed through interaction between network members.

The typology of knowledge relevant for internationalization is described in the figure below:

***Figure 5: Typology of knowledge for internationalization***




*Source: Own work*

According to Uppsala model knowledge is embedded in individuals, and this knowledge is difficult to transfer and disseminate, even within the business. The logic behind this reasoning it that market-specific knowledge is acquired through experience, making the employee in charge of performing a particular routine or process the central repository of that knowledge. Many researchers have studied the issue of embeddedness of knowledge (Fiol and Lyles, 1985; Levinthal, 1991). It is currently accepted that knowledge, including tacit knowledge, could be embedded in teams and organizations as well as in individuals (Levitt and March, 1988). Network theory (Johanson and Mattsson, 1988, Johanson and Vahlne, 1990 and 1992, Forsgren and Johanson, 1992) focuses on the long-term business relationships that exist between firms and firm managers, and suggests that businesses could benefit from the knowledge and experience of others through strategic partnerships or alliances. Along the same lines, some researches (Kraatz, 1998, Lane and Lubatkin, 1998; DiMaggio and Powell, 1983; Björkman, 1990; Haunschild and Miner, 1997) believe that businesses could access experiential knowledge of other businesses through imitative learning without necessarily going through the same experiences.

Johanson and Vahlne also suggested that international involvement and commitment of resources to foreign markets, increases with knowledge acquisition. This relationship between knowledge, internationalization intensity and resource commitment was later studied by Erramilli (1991) who suggested a U-shaped relationship between the variables. The logic behind this U-shaped curve is the following: At an early stage in the life of the business, before thorough market research becomes an integral part of any internationalization effort, business managers tend to be overoptimistic about foreign market opportunities. As time goes by and the business acquires experience and knowledge, managers will be confronted with hard facts resulting in a temporary reduction of their willingness to engage in high-control, and high-commitment operation modes in foreign markets. Eventually, as knowledge and experience continues accumulating and flowing across the business, managers will become more confident about their business *vis-à-vis* local competitors, thereby returning to the initial willingness to undertake investments in high-commitment operation methods.

Knowledge is also prominent in the case of the early internationalizing firms described by the IE model where experience, information and know-how are not only embedded in the firm's routines and processes, but also in the professional memory of its employees. The early and rapid internationalization process is fuelled by the international knowledge, skills and experience of the firm's managers acquired as part of their previous work experiences.

Entrepreneurs and top management teams bring to the new business their prior international knowledge, skills and experience, and are influenced by their backgrounds. However, this prior experience may become outdated or less relevant over time, and thus new learning is required. When we turn our attention to the business instead of its managers, younger firms may have the "learning advantage of newness" as organisational routines and structures are more flexible and adaptable to international operations.

### 3.3.2 Knowledge for internationalization: the role of the manager

As with everything else in the business, the manager, through her choices, has a profound effect on the way knowledge is managed during the internationalisation process of the business. When it comes to the decision about acquisition of knowledge, the manager needs to make a decision concerning how much knowledge is needed, how that knowledge is going to be brought to the business, and in which form is that knowledge needed. Later, the manager will be confronted with the decision of what tacit knowledge could potentially be codified in order to facilitate its transfer across the business. Finally, the manager would need to determine what the best mechanisms are that would ensure an adequate transfer and flow of knowledge through the business.

Managerial discretion plays an important role when determining the amount of knowledge that is required in order to make a decision about resource commitment to a foreign market. The Uppsala model bases its predictions in the assumption that managers are risk averse, and that the degree of risk aversion would be determined by the perceived market uncertainty and the size of the resource commitment in the foreign market being considered. This assumption seems not to be generally accepted, as some empirical studies show that important decisions in the internationalisation process reflect risk-taking behaviour, and even some degree of impulsiveness (Calof, 1993; Andersson, 2000; Petersen *et al*., 2000). The stock of information, and the knowledge management processes in place could potentially play an important role in determining the degree of manager's risk aversion.

Another important responsibility of the manager is to ensure knowledge acquisition through strategic partnerships with other enterprises as well as through the recruitment of personnel with valuable international knowledge (Huber, 1991; Barkema and Vermeulen, 1998). By doing this, the manager positively affects the stock and rate of growth of knowledge within the firm and reduces the dependency on firm specific experience. An example of this could be seen in the success of the born global enterprises (Knight and Cavusgil, 1996; Madsen and Servais,

1997), whose success resides in the previously acquired stock of international knowledge and experience of its personnel.

The manager should also determine whether the business needs to acquire objective knowledge or experimental knowledge. The need for time-consuming experiential learning could probably be brought down if the company is willing to pay the costs of, for example, export consultants. Whether this option would be attractive or not to the business would depend on a trade-off between relatively slow international expansion and fast, but potentially expensive expansion.

One of the key responsibilities of the manager is to determine what experiential knowledge that largely takes a tacit form, should be subject to transformation into explicit objective knowledge to be disseminated. The Uppsala model remains silent on this issue. Some authors (Nelson and Winter, 1982) are of the opinion that the fundamental factor affecting manager's decision is whether the costs associated with the obstacles to articulation are sufficiently high so that the knowledge remains tacit. Hedlund (1994) is of the opinion that "*organizations are articulation machines, built around codified practices and deriving some of their competitive advantages from clever, unique articulation*… (and that) … *much of industrialization seems to have entailed exactly the progressive articulation of craftsman-like skills, difficult but not impossible to codify*". In the same line of reasoning, Håkanson (2000) argues that most tacit skills with some economic value could be articulated. Since the codification process entails high initial fixed costs, but at the same time it allows firms to transfer knowledge at very low marginal costs, the codification of internationalisation knowledge is subject to a cost-benefit appraisal conducted by the manager. As a consequence of this cost-benefit analysis, it is plausible to think that large firms are in a better position than SMEs to allocate resources for knowledge codification.

The codification of experimental knowledge does not necessarily guarantee its transfer and utilization throughout the business. Again, the Uppsala model remains silent on this issue and assumes that managers will ensure knowledge is available to those that need it. This is rather unrealistic as with the exception of small, entrepreneurial firms, it is very uncommon that managers get deeply involved in operations where the market-specific knowledge is generated, acquired and used. In most companies one cannot expect proper knowledge distribution to take place without the presence of appropriate incentive structures which are subject to substantial managerial discretion (Szulanski, 1996). The larger and the more hierarchical the business is, the higher the chances that the different units of the business would generate very different and sometimes contradictory knowledge (Forsgren, 2000). It is therefore an immense management task to sort out what knowledge is of strategic importance and how this knowledge should be

transmitted across the organisation. It is therefore not sure that knowledge acquired in one part of the business would automatically be transferred and put to use in other parts.

### 3.3.3 Could knowledge be malleable and multipurpose?

Even though intuitively knowledge acquired through internationalization could be expected to play multiple roles and have several growth implications, among scholars there is no consensus on the implications of knowledge acquired in international markets for firm growth. By operating abroad businesses expand their experiences and increase the acquisition of new knowledge and insights (Barkema and Vermeulen, 1998), which could lead the development of a competitive advantage over domestic firms in terms of endowment of new knowledge and insights.

It is nevertheless unclear what the resulting growth outcomes are that might result from this enlarged knowledge-base. Researchers aligning with the Uppsala school believe that the accumulation of experiential market knowledge strengthens the firm's commitment to further internationalization (Johanson and Vahlne, 1977). International entrepreneurship (IE) scholars suggest that the new knowledge-base could provide businesses with a platform "*for expanding the scope of these firms' activities, products, and markets, providing an impetus for high growth*" (Sapienza *et al*., 2006). Eriksson *et al*. (1997) assume that knowledge acquired from internationalization is, to a certain extent, content-wise different from other types of knowledge, such as the knowledge acquired from domestic operations. Consequently, new knowledge generated from internationalization is more likely to enhance the discovery and exploitation of opportunities in international markets than in domestic markets.

Given that knowledge allows SMEs to act in new ways (Huber, 1991) we can expect SMEs to do things differently and accomplish new things in the home market as well as abroad. New knowledge can also enhance the discovery and exploitation of opportunities (Wiklund and Shepherd, 2003). These opportunities could take three forms:

- First, experiential market knowledge makes it possible for the firm to perceive and act upon opportunities, such as understanding customers' problems and proposing alternative solutions. Shane (2000) confirms that prior knowledge of customers' problems conditions the discovery of new products and services. New knowledge provides firms with a platform for targeting new customers and new markets (Autio *et al*., 2000; Zahra *et al*., 2000).

- Second, foreign market knowledge reduces SMEs' liability of foreignness (Hymer, 1970). Hence, it allows SMEs to take advantage of new local opportunities, which are not available to purely domestic firms. As confirmed by Chetty and Campbell-Hunt (2003), the knowledge acquired through internationalization may open new markets and develop new products.
- Third, new knowledge provides a base through which innovations (Leonard-Barton, 1995) and new business methods (Knight and Cavusgil, 2004) could be developed. Cattani (2005) shows that businesses could generate valuable innovations from skills and knowledge already acquired, instead than creating new resources from scratch. New technological insights might also facilitate the development of new core competences and thereby, decrease a firm's likelihood of falling into competency traps (Levitt and March, 1988).

## 3.4 Knowledge management and business performance

Knowledge and the capability to manage it seem to be the most important common denominator of the distinct but interrelated bodies of knowledge explored in this document. Clearly, knowledge seems to be the most important resource to achieve competitiveness and to grow in domestic as well as international markets. In that sense, knowledge is the foundation stone where the business supports its structure and ambitions, and knowledge management capability plays the role of a catalyst for the dynamic processes that lead to successful internationalization and growth.

Relatively little is known about how dynamic capabilities affect firm performance, and researchers seem not to be able to find an agreement on the existence of a link between these constructs (Cepeda and Vera, 2007). Authors like Teece *et al*. (1997), Lee *et al*. (2002), and Griffith and Harvey (2001) believe dynamic capabilities are directly related to competitive advantage, while others believe this link is indirect (Bowman and Ambrosini, 2003; Zott, 2003). A different opinion is expressed by authors like Helfat *et al*. (2007) and Easterby-Smith and Prieto (2008) who are in favour of decoupling the notion of dynamic capabilities and performance on the argument that dynamic capabilities *per se* do not lead to competitive advantage, but their correct deployment and use determines their success.

While organizational performance has been a core issue in the research on dynamic capabilities since the seminal article of Teece *et al*. (1997), the question of whether, how, and through which

mechanisms they affect performance is still open (Zott, 2003; Helfat *et al*., 2007). Even if dynamic capabilities are equifinal across firms, robust performance differences may arise if the costs and timing of dynamic capability deployment differ across firms (Zott, 2003).

This is particularly true for the dynamic capability that is the focus of this chapter, the business' knowledge management capability. Becerra-Fernandez *et al*. (2004) suggest that the impact on knowledge management on business' performance could be divided into two types: direct impact resulting in improvements in return of investment, and indirect impact resulting in the achievement of economies of scale and scope, and the generation of sustained competitive advantage. As Davenport (1999) clearly points out, even though the relationship between knowledge management and performance indicators has been addressed in the business literature and a positive relationship has been found (Marques and Simon, 2006; Kasim, 2008; Boumarafi *et. al*., 2008; Fugate *et. al*., 2009; Wang *et. al*., 2009; Ibrahim *et. al*., 2009; Zack *et. al*., 2009; Chadha and Kapoor, 2010), the existence of causality is still to be demonstrated.

Despite limited empirical research, previous studies suggest that business performance depends on the firm's ability to develop knowledge management capabilities aimed at creating and delivering value added products to the market, achieving cost efficiencies, and increasing productivity (Castanias and Helfat, 1991; Davenport and Klahr, 1998; Nielsen, 2006; Ling *et. al*., 2007; Wang *et. al*., 2009). In this context, a business' ability to effectively develop and deploy knowledge management capabilities becomes increasingly important for the establishment and sustenance of a competitive advantage (Grant, 1996b; De Carolis, 2003). Table 14 shows sample of other researchers' findings.

Measuring the effects of knowledge management capabilities on business performance is a complex issue, and it basically consists on identifying and measuring the benefits that can be reaped by appropriate knowledge management outcomes, such as productivity and profitability increases (Argote *et al*., 2000). Performance indicators used previously in the literature are: overall success, market share, growth rate, profitability, innovativeness, business size, operational and financial efficiency, stakeholder satisfaction, competitive position, innovation, new product success, customer satisfaction, quality in processes and products or services, and flexibility in resource utilisation (Deshpande *et al*., 1993; Drew, 1997; Hudson et al., 2001; Almashari *et al*., 2002; Gupta *et al*., 2002; Choi and Lee, 2003; Foray, 2003; Gloet and Terziovski, 2004; Darroch, 2005; Marques and Simon, 2006; Lundvall and Nielsen, 2007; Kumarawadu, 2008; Fugate *et al*., 2009; Kiessling *et al*., 2009). Indicators of business performance can be

categorized in two groups: financial and non-financial indicators (Kaplan and Norton, 1992; van Buren, 1999; Allen and Helms, 2002; Choi and Lee, 2003; Lee and Choi, 2003).

***Table 14: Knowledge management and business performance***

| Author | Findings |
|---|---|
| Iansiti and Clark (1994) | Found empirical support to the hypothesis that the existence of firm's *knowledge integration* processes is positively correlated with positive firm performance and with performance improvements over time. |
| Henderson and Cockburn (1994) | A firm's ability to *integrate knowledge* from external sources is positively related to its research productivity, measured by patent counts. |
| Davenport and Prusak (1998) | Firm performance is improved through firm's ability to *locate and share useful knowledge*. |
| Zollo and Singh (1998) | In a study of post-acquisition integration processes, the authors found that acquirers who devoted more effort to *codifying* their integration processes significantly improved their return on assets relative to competitors. |
| Gold *et al*. (2001)<br>Mohrman *et al*. (2003) | Firm performance is improved when the organisation *creates and uses knowledge*. |
| Mohrman *et al*. (2003) | Found a positive relationship between the extent to which a firm *creates and exploits knowledge* with overall firm performance. |
| Becerra-Fernandez *et al*. (2004) | The authors discussed the impact of knowledge management processes on *people*, *processes*, *products* and *firm performance*. They noted that knowledge management processes could affect organisations in those four areas in two main ways: (i) knowledge management can help create knowledge, which can then contribute to improved firm performance; and (ii) knowledge management can directly cause improvements in people, processes, products and Firm Performance. |
| Darroch (2005) | Knowledge management correlates positively with the incremental innovation. Furthermore, there is a relationship between knowledge management and survival and sustainable growth in SMEs. |
| Lee *et al*. (2005)<br>Zaim *et al*. (2007) | *Knowledge generation, transfer, utilisation and coding, and storage processes* significantly influence knowledge management practices and firm performance. |
| Marques and Simon (2006) | A positive relationship between *knowledge development, transfer and protection processes* with firm performance was demonstrated in a study conducted on biotechnology and telecommunication SMEs. |
| McKeen *et al*. (2006) | Knowledge management practices are positively associated with improvements in firm performance using both qualitative and quantitative measures. |
| Kasim (2008) | Knowledge management practices at the organizational level are a prerequisite for successful operational performance. |
| Zack *et al*. (2009) | Their study found that knowledge management practices were directly related to operational performance which, in turn, was directly related to financial performance. Their study did not find a direct relationship between knowledge management practices and financial performance. |
| Chang and Chuang (2011) | KM processes enhance firm performance in Taiwan manufacturing industries. |

*Source: Own work*

From a financial point of view, the ultimate objective of knowledge management is to capitalize on knowledge assets to increase profit, reduce costs, achieve higher prices, increase sales volumes, etc. (Kalling, 2003). Financial performance is usually measured in terms of profitability

and growth (Venkatraman, 1989). The growth dimension reflects the performance trends of the business in terms of sales gains and market share gains, that is, effectiveness, while the profitability dimension reflects an efficiency view of current performance. Financial measures are objective, though imperfect, indicators of firm performance.

Non-financial performance differs from the examination of traditional financial performance as it focuses additionally on a third dimension of business performance: adaptiveness (Ruekert *et al*., 1985). Adaptiveness measures the firm's success in responding to changes in environment. This dimension is particularly important when we deal with export businesses as international markets tend to more dynamic than local markets. Non-financial indicators of firm performance could be subjective in nature. They could be based on people's perceptions and beliefs obtained from interviews and surveys where they are asked to rate their firm in comparison with their top competitors on each measure of performance. Subjectivity per se should not necessarily imply lack of accuracy. When assessing the performance effects of the knowledge management capability on adaptability, it is important to consider the extent to which knowledge is used for exploration (e.g. to improve decision-making, speed up innovation, develop new business areas, etc.) and exploitation purposes. (e.g. to improve labour productivity, improve customer satisfaction, and reduce costs).

If the goal is to measure the impact of knowledge management capability on export performance, it is important to take into account Dhanaraj and Beamish's (2003) argument that at the firm level, export intensity may not be the critical performance indicator. A high intensity only indicates that exports are high relative to domestic sales, which may not necessarily be an indication of competitiveness or profitability. Studies on the correlation of export intensity with profitability are inconclusive (Gemunden, 1991). Export intensity is an outcome of the export strategy, and quite often the question of "*How much to export?*" is treated in relation to "*What markets to export to?*".

Competitiveness is a multidimensional concept and in essence it requires the business to be sufficiently flexible, effective and efficient to understand and foresee market changes, and to adequately identify and implement the changes needed in the business strategy and operations. This is in line with Helfat *et al*. (2007) suggestion that the effects of dynamic capabilities should be assessed using the concept of evolutionary fitness as "*the extent of evolutionary fitness depends on how well the dynamic capabilities of an organization match the context in which the organization operates"*.

## 3.5 The management of knowledge

The fact that knowledge exists in the business does not imply that it could be stored, located, and made available to those that that need it, when they need it. Research has shown that the ability to transfer knowledge contributes to organizational performance both in the manufacturing and service sectors (Galbraith, 1990; Darr *et al.*, 1995; Epple *et al*., 1996; Baum and Ingram, 1998). It is at this moment that knowledge management becomes important. As rightly pointed out by several authors (Kotnour *et al*., 1997; Bassi, 1998; Ulrich, 1998), knowledge management is a means to an end not an end in itself. Consequently, knowledge management must be linked to the strategy of the business. By providing a context for the understanding of the role of the business in its environment and by conditioning decision-making, strategy determines what knowledge is needed and how it should be used.

The essence of knowledge management is to make knowledge usable for more than one individual and to improve organizational performance. In that sense it refers to the processes or mechanisms the business puts in place to ensure the continuous generation (Ichigo *et al*. 1998), acquisition, utilization, protection, and transfer of knowledge (Stonehouse and Pemberton 1999). Lee and Choi (2003) emphasized that knowledge management consists of processes to manage knowledge and its enablers (i.e. organizational culture, structure, people, and information technology) to support these processes[12]. Knowledge management highlights the hierarchy of knowledge (Davenport and Prusak, 1998; Kakabadse *et al*., 2003) presented in the competence ladder that sees data, information awareness, action or reaction, and perception as a build-up of knowledge flow. The recognition of the importance of knowledge resources for a firm is critical, because the effectiveness of knowledge and learning can only be assessed on the basis of its utility in guiding behaviour relative to the firm's strategy (Crossan *et al*., 1999; Zack, 1999; Cepeda *et al*., 2004).

Knowledge management is a concept that has received many different definitions in the literature in an attempt to capture the inner complexities associated with the term. Despite the vast available literature on the topic, there is no widely accepted definition of knowledge management (Earl, 2001). The box and the table below shows the definition of knowledge management that will be used in this work, and the definitions given by other researchers.

[12] This definition goes beyond the strict definition of managing knowledge and has implications for the management of other resources such as human resources and IT infrastructure.

***Box 11: Knowledge management***

For the purposes of this work, and in order to avoid confusion, whenever we talk about knowledge management and when we are not citing other researchers' work, we will be referring to:

> *"The systematic execution of all business processes referred to the identification, generation, codification, storage, conversion, application, transferring, and protection of knowledge"*

***Table 15: Definitions of knowledge management***

| Authors | Knowledge management definitions |
|---|---|
| Hannabuss (1987) | What information users know, their knowledge and attitudes, and their decision making when interacting with others |
| Nonaka and Takeuchi (1995) | A knowledge conversion activities for knowledge creation |
| Gopal and Gagnon (1995) | The categories of knowledge needed to support the overall business strategy, assess the firm's current knowledge and transfer the knowledge base to be more powerful and to fill gaps. |
| Demarest (1997) | Systematic underpinning, observation, instrumentation, and optimization of a firm's knowledge |
| Bair (1997) | Aim to capture the knowledge that employees really need in a central repository and filter out the surplus. |
| Van der Spek and Spijkervet (1997) | The explicit control and management of knowledge within an organisation aimed at achieving the company's objectives. |
| Knapp (1998) | The set of processes for transforming information and intellectual assets into enduring value for an organization's clients and its people |
| Holsapple and Joshi (2000) | Make needed knowledge available to appropriate processes effectively and timely to perform activities |
| Walters (2002) | The organizational capability which identifies, locates (creates or acquires), transfers, converts and distributes knowledge into competitive advantage. |
| Darroch (2003) | The process that creates or locates knowledge and manages the sharing, dissemination, and use of knowledge within the organization |
| Becerra-Fernandez *et al*. (2004) | Performing the activities involved in discovering, capturing, sharing, and applying knowledge so as to enhance, in a cost-effective, the impact of knowledge on the unit's goal achievement. |
| Debowski (2006) | The process of identifying, capturing, organizing and disseminating the intellectual assets that are critical to the organization's long term performance. |
| Jennex and Olfman (2006) | Management's through efforts to use tools and approaches to locate, refine, transfer, and apply the knowledge and experience available to the organization. |

*Source: Own work*

### 3.5.1 Knowledge management processes

Building on Zack's (1999) notion that the most important context for guiding knowledge management is the firm's strategy, Cepeda (2006) suggests that in order to implement knowledge management processes that support the firm strategy, managers need to consider three important issues. First they need to assess what the firm must do to compete and what the firm can actually do. Second, they should establish what the firm must know to compete and what the firm actually knows. Third, firms need to recognize what their knowledge management infrastructure needs to be and what it currently is.

Citing other authors, Wijnohoven (2003) gives a definition of knowledge management that is process oriented: "*Knowledge management (KM) is often defined as the process that create, distribute, use, exploit, and maintain knowledge*". Several authors have addressed the issue of knowledge management processes, and there is still a lack of consensus on a common set of these processes. The table below shows a brief summary of the academic discussions.

***Table 16: Knowledge management processes***

| Author | Knowledge processes |
|---|---|
| Leonard-Barton (1995) | 1. Acquire; 2. Collaborate; 3. Integrate; 4. Experiment |
| Pentland (1995) | 1. Construction; 2. Organization; 3.Storing; 4. Distribution; 5. Application |
| DeLong (1997) | 1. Capture; 2. Transfer; 3. Use |
| Teece *et al*. (1997) | 1. Create; 2. Transfer; 3. Assemble; 4. Integrate; 4. Exploit |
| Probst (1998) | 1. Knowledge goal; 2. Identification; 3. Acquisition; 4. Development; 5. Distribution; 6. Preservation; 7. Use; 8. Measurement |
| Ruggles (1998) | 1. Generation of new knowledge<br>2. Accessing valuable knowledge from outside sources<br>3. Facilitating knowledge growth through culture and incentive<br>4. Representing knowledge in documents, databases, and software<br>5. Embedding knowledge in processes, products, and/or services<br>6. Using accessible knowledge in decision making<br>7. Transferring existing knowledge into other parts of the organization<br>8. Measuring the value of knowledge assets and/or impact of knowledge management |
| Skyrme and Amidon (1997) / Spender (1996) | 1. Creation; 2. Transfer; 3. Use |
| Probst *et al*. (2000) | 1. Identification; 2. Acquisition; 3. Development; 4. Sharing/distribution; 5. Utilization; 6. Retention |
| Alavi and Leidner (2001) | 1. Creation; 2. Storage; 3. Transfer; 4. Application |
| Gold *et al*. (2001) | 1. Acquisition; 2. Conversion; 3. Application; 4. Protection |
| Shin *et al*. (2001) | 1. Creation; 2. Storage; 3. Distribution; 4. Application |
| Zahra and George (2002a) | 1. Acquisition; 2. Assimilation; 3. Transformation; 4. Exploitation |
| Pan and Scarbrough (1998) | 1. Generation; 2. Processing; 3. Storage; 4. Dissemination; 5. Use |
| Kraaijenbrink and Wijnhoven (2006) | 1. Identification; 2. Acquisition; 3. Utilization |

*Source: Own work*

***Box 12: Knowledge management processes***

For the purposes of this work we will describe knowledge management as a systematic mix of processes by which knowledge needed for a business to succeed is created, captured, shared and leveraged. This is done through seven interelated generic processes:

1. *Knowledge identification*
2. *Knowledge generation*
3. *Knowledge codification*
4. *Knowledge storage*
5. *Knowledge conversion*
6. *Knowledge transfer*
7. *Knowledge protection*

These generic processes could take different forms, and there could be more than one formal process within each generic process.

Below the reader can find a brief explanation of the generic processes this work will consider necessary for developing an adequate knowledge management capability. Even if the number and names of these processes may differ, the majority of knowledge management models comprise the same fundamental generic processes. This typology is based on the existing literature and is an attempt to summarize and structure the work of other researchers.

***Knowledge identification***

A key to understanding the success or failure of knowledge management efforts within businesses is management's ability to identify the relevant knowledge to manage, and to extract value out of this knowledge. Unfortunately, and despite the growing interest in knowledge management, little specific has been said about the mechanisms firms use to identify key knowledge areas.

Proper identification of information needs is a key problem in this process (Dervin, 1992; Choo *et al*., 2000). The starting point for proper knowledge identification would be the "*identification of the information needs, which could be defined as finding out to a satisfying degree what knowledge an actor needs at a certain moment for a particular purpose*" (Kraaijenbrink and Wijnhoven, 2006). Identification of knowledge needs should be followed by a thorough gap analysis where an assessment of what knowledge is lacking at a certain point in time for a particular purpose is prepared. Finally, it is important that the business is able to identify all potential sources of knowledge, both internal to the firm and external, and identify the one that is more suited for the business needs.

***Knowledge generation***

Knowledge generation is probably the most important process for the business long term success (Fahey and Prusak, 1998). At the individual level, knowledge is created via cognitive processes such as learning, while social systems generate knowledge through collaborative interactions (Smith and Lyles, 2003). The knowledge creation process consists of the development of new knowledge by transforming raw data into information, putting it in context, and replacing existing knowledge within the business knowledge base (Pentland, 1995). In this process, the human capital utilizes technological tools enabling the collection and classification of knowledge.

By knowledge generation process we understand in this work the conscious and intentional effort undertaken by the business to increase its stock of knowledge (Davenport and Prusak, 1998). When it comes to enlarging the stock of knowledge Helleloid and Simonin (1994) suggest that businesses have five options: (1) independent internal development, (2) externally assisted internal development, (3) purchase of new knowledge from the public market, (4) corporate cooperation, and (5) merger and acquisition.

Knowledge acquisition refers to the appropriation of knowledge from external sources, and the adoption of that knowledge for the business internal operations (Bhatt, 2000). Businesses acquire knowledge through several methods: Imitation, benchmarking, replication, substitution, purchasing, outsourcing and discovering (Nelson and Winter, 1982; Zander and Kogut, 1995; Bhatt, 2000; Zaim, 2000). Knowledge acquired from external sources could be used as input to create new knowledge inside the business. The ability to acquire knowledge is, however, partly based on the business' absorptive capacity (Gold *et al*., 2001), and the full value creating potential of new knowledge can only be realised through other key knowledge management processes manipulating the acquired knowledge. Through the combination of newly acquired information with their prior knowledge, experiences, values and organizational procedures, businesses manage to transform information into knowledge (Hong, 1999). This new knowledge enlarges the existing stock of knowledge, and according to Von Krogh and Roos (1996) this is why the knowledge acquired through organizational processes is unique for a particular business. Knowledge acquisition is one of the key factors behind a firm's international behaviour in terms of selection of foreign markets, the ways firms enter markets, and the speed of the launch.

Even though knowledge acquisition is an important mode of knowledge generation, this type of knowledge could in principle be also acquired by competitors and used for the same purposes.

Hence, its market value is approximately equal to its value within the firm. This knowledge tends to be rather technical and explicit, which makes it relatively easy to acquire. Because of all these, one would be sceptical about the value of this type of knowledge as a source of real competitive advantage. On the other hand, the ability of the business to create unique new knowledge within the organization could lead to a real competitive advantage *vis-à-vis* existing competitors. In this context, the key factor for business success shifts from information processing to knowledge creation and continuous innovation (Malhotra, 2000).

Creation of knowledge within a business refers to the transformation of individual employees' skills or knowledge into knowledge that is embedded in the organization by means of proper transformation mechanisms. Business-specific knowledge refers to the firm's particular modes of functioning and to its particular organizational context. It acts as organizational glue when the fast incorporation of external knowledge into the firm may threaten its cohesiveness and sense of unity. Knowledge creation is not a systematic process that can be tightly planned and controlled. It has been widely accepted among scholars that organizational knowledge creation is heavily influenced by social processes. Probably the best known knowledge creation model is that of Nonaka and Takeuchi (1995)[13]. In this model three of the four distinct phases, namely, socialization, externalization and combination; involve extensive social interactions among organization members (Chua, 2002a).

According to Nonaka (1994) "*only individuals could create knowledge and thus an organization cannot create knowledge by itself without individuals*", therefore, the role of the organization is to support creative individuals and/or provide a proper environment to allow individuals to create knowledge. Knowledge creation within a firm is consequently the process of strengthening and concretizing the knowledge created by individuals and making it part of the business' knowledge.

A conventional method of knowledge generation within the firm is establishing specific units or groups for that purpose such as research and development departments (Davenport and Prusak, 1998). Although according to many authors, generating new knowledge cannot be a specialized

[13] The Nonaka and Takeuchi (1995) model theorized that the creation of knowledge is the result of a continuous cycle of four mutually complementary and interdependent processes: externalization, internalization, combination, and socialization. Externalization refers to the articulation of conceptual tacit knowledge explicitly through the use of techniques such as metaphors and models. Internalization implies the pass from explicit to tacit knowledge by learning by doing and the sharing of mental models and technical know-how. Combination refers to the manipulating explicit systemic knowledge through techniques such as sorting and combining to codify existing explicit knowledge into new explicit knowledge. Finally, socialization refers to the experience sharing mechanisms by which tacit knowledge flows within the firm.

activity of a single unit or department but rather shared mind-set and behaviour that cuts across all departments and every single person in the organization (Nonaka, 1998).

Academic research has been able to find a strong and positive link between knowledge generation and business performance. According to Song (2008), businesses' internal knowledge generation practices are significantly related to organizational improvement. When it comes to acquired knowledge, the key to find a significant and positive link between knowledge acquisition and organizational performance is the proper use of such knowledge by the business (Lyles and Salk, 1996; Saleim and Khalil, 2007).

***Knowledge codification***

Knowledge becomes meaningful only after it is classified, given a shape, and put in a useful format (e.g. written down in books and manuals, stored on instructional videos, or embedded in everyday work procedures or software such as diagnosis software or expert systems). Only after all these have been done knowledge is ready to be used by the right person, at the right time, in the right way. The importance of codifying knowledge goes beyond the effective use of knowledge, as it is important for its re-utilization when needed, making the knowledge in question belong to the business rather than the individual (Nemati, 2002).

Despite its significant importance, codifying and classifying knowledge is not a simple task as knowledge is essentially what people know, and it is most likely dispersed and scattered throughout the organization. Knowledge is found in people's minds, organizational processes, corporate culture, and embedded into different procedures (Bhatt, 2001). It is therefore, difficult to capture and identify the knowledge dispersed throughout the organization and to clarify what an organization exactly knows.

Knowledge codification and classification according to purpose, type and importance of knowledge, is necessary for filtering and eliminating the knowledge and information *hea*p (Lueg, 2001). Codification should be done according to the business overall goals and objectives set in the strategy. The most challenging feature of codification of knowledge is to do it without losing its distinctive characteristics that makes it valuable (Davenport and Prusak, 1998).

One of the most difficult aspects of codifying knowledge is to codify tacit knowledge, which unlike explicit knowledge, cannot be formalized, documented and communicated easily (Chua, 2002b). The easiest and most accurate way of codifying tacit knowledge is to match the knowledge seeker and the knowledge holder through knowledge maps showing the type of knowledge and expertise that exist in the business as well as its location (Davenport and Prusak, 1998).

***Knowledge storage***

Alavi (2000) asserted that creating new knowledge is not sufficient as individuals as well as institutions tend to forget, therefore mechanisms are needed in order to store acquired knowledge and to retrieve important knowledge when needed.

The individual characteristics of tacit and explicit knowledge also have a considerable impact in the storage of knowledge. As with knowledge identification, generation, and codification, explicit knowledge can also be easily stored and retrieved through technological means and systems without having to rely on a specific individual. The difficulty of storing knowledge arises when we recall that a great deal of the business' knowledge resides in the minds of its employees in the form of tacit knowledge (Drott, 2001).

Tacit knowledge by definition is difficult to store, but limited storage of tacit knowledge could be accomplished by converting it to an explicit form, and/or by sharing and disseminating tacit knowledge. Other ways of storing tacit knowledge are the use of narratives (Linde, 2001), artefacts (Kreiner, 2002) or knowledge exchange protocols (Herschel, 2001). The most effective way of storing tacit knowledge is to store it via the social processes and personal face to face interactions. In this case, different methods, varying from conventional ones as apprenticeship, mentoring and action learning to more advanced ones such as networking and video conferencing, can be useful (Davenport and Prusak, 1998; Herrgard, 2000).

***Knowledge conversion***

The conversion of knowledge aims at making existing knowledge useful in the development of capabilities needed to cope with the business environment (Teece *et al*., 1997; Gold *et al*., 2001; Lee and Suh, 2003; Winter, 2003) and the expansion into new competitive arenas (Prahalad and Hamel, 1990). Knowledge conversion is made possible through synthesis, refinement, organization (Davenport and Klahr, 1998; O'Dell and Grayson, 1998), integration (Grant, 1996b, Zahra *et al*. 1999; Nielsen, 2006), combination, structuration, and coordination of knowledge (Miller and Friesen, 1984a; Moore, 1996; Sanchez and Mahoney, 1996).

***Knowledge transfer***

Knowledge transfer has been studied extensively (Zander and Kogut, 1995; Szulanski, 1996; Appleyard, 1996; Hansen, 1999; Bock and Kim, 2002). A key parameter to determine the effectiveness of knowledge management capabilities is effectiveness and efficiency with which the existing stock of knowledge is transferred throughout the business in order to ensure that it is easily reachable for those that need it, when they need it.

Organizations do not necessarily know what they know. To a large extent, this is because internal transfers of knowledge, rather than fluid, are often "sticky" or difficult to costly to acquire, transfer and use in a new location (von Hippel, 1994; Szulanski, 1994). When this happens, problem solving tends to be concentrated in one location (i.e. knowledge is not shared), or solved interdependently by the different business units.

Knowledge transfer plays a crucial role in successful implementation of knowledge management practices. Without knowledge sharing, knowledge management cannot be sustained and the organization will gradually lose its competitive edge. Knowledge sharing, and not just owning knowledge is linked to the competitive advantage of the firm in the organisation literature (von Krogh *at al*., 2001). As noted by Mueller and Dyerson (1999) knowledge that is not shared slows innovation in organisations (Teece, 1998).

The efficient and effective transfer of experiences, insights, and know-how among the different experts and decision makers within the business is a prerequisite for high quality decision making and coordinated firm actions (Straub and Karahanna, 1998). Argote *et al*. (2000) define knowledge transfer as the process through which a unity (individual, group, department, and organization) is affected by the experience of another. Along the same lines Rolland (2000) defines knowledge transfer as "*the integration, by individuals and groups in its own knowledge base, of new external knowledge that will modify its beliefs and routines and that can be used in commercial activities*". Knowledge transfer aims at successful transmission of know-how (e.g. how to accomplish a task), know-why (e.g. the cause effect relationships of a complex phenomenon), know-what (e.g. the results of a test), and know-who (e.g. the experiences with others) through face-to-face or media-based interaction (Eppler, 2006).

Recent studies have expressed considerable interest in knowledge sharing practices (Hicks *et al*., 2007), and the benefits of knowledge transfer (Sveiby and Simons, 2002; Riege, 2007). Knowledge transfer has a potentially very high impact on competence enhancement for both, the source and the receiver of knowledge. This is because knowledge does not leave the owner when it has been transferred, and the value of knowledge grows each time a transfer takes place. How much value would the transfer of knowledge generate would depend on how effectively the knowledge has been transferred throughout the business (Sveiby, 2001).

There are different factors that facilitate or block knowledge transfer efforts.

- Szulanski (1996) found that the three most important factors in the transfer of knowledge were: 1. **Absorptive capacity** of the recipient, 2. **Causal ambiguity** and 3. **Arduous relationships** between sources and recipients of knowledge (i.e. relationships

are arduous if there is a lack of intimacy, if it is difficult or costly to communicate between different units).

- Simonin (1999) studies the role of causal ambiguity in knowledge transfer in alliances and finds that ambiguity is negatively associated with transfer, but also identifies, empirically, some of the drivers of ambiguity. Tacitness and complexity (referring to the number of interdependent technologies, routines and individuals linked to the knowledge) are two important drivers of ambiguity. Experience was negatively correlated with ambiguity. Furthermore, **cultural distance** (differences in the view on collaboration) and **organisational distance** (differences in business practices, institutional heritage and organisational culture) are also positively associated with ambiguity.
- Argote and Ingram (2000) argue that knowledge sharing is stimulated by intensive **integrative practices** such as cross-functional meetings, early development of specifications and broad participation from multiple functions.
- Walczak (2005) found that by supporting decision-making of knowledge workers through **collaboration and interaction** with other knowledge workers a "knowledge culture" is created.
- Inkpen and Tsang (2005) claim that personnel transfer, decentralisation, shared vision, the acceptance of local cultures, and trust, are important drivers of intra-organisational knowledge sharing.
- A study by Epple *et al*. (1991) highlighted that knowledge transfer cannot be achieved only by using technology, human interaction is necessary as well. The authors identified two factors, **training** and **geographical proximity** between source and recipient of knowledge, as important factors.
- In a subsequent study, Epple *et al*. (1996) suggested that the **managerial and engineering attention paid to the recipient of knowledge** is an important factor in the successful transfer of knowledge.
- Levin and Cross (2004) emphasise that knowledge sharing ultimately depends on relations between individuals. Similar conclusions are drawn in two studies by Tsai (2000 and 2001), which identify absorptive capacity, strategic relatedness, network centrality (number of firm-internal linkages to a unit) and perceived trustworthiness as factors favouring transfer of knowledge.
- Kane *et al*. (2005) underline the role of perceived identity, i.e. to what extent a person who shares his or her knowledge is perceived as competent, among people who attempt

to share knowledge. Recipients of knowledge have a tendency to reject new routines if the source of the knowledge behind the new routine is not perceived as having a similar identity.

- Reagans and McEvily (2003) underline the importance of social cohesion as the driver behind the will to invest time and effort in sharing knowledge.

Knowledge transfer has been assessed by the use of object-perspective measures such as time to transfer (Zander and Kogut, 1995), number of times of knowledge transfer (Appleyard 1996), percentage of transferred knowledge (Hansen, 1999), or perceived quality of shared knowledge and level.

The business literature has identified a number of barriers to knowledge transfer. The following table was taken from Eppler (2006).

***Table 17: Knowledge transfer barriers***

| Key concept or knowledge transfer barrier | Description | References |
|---|---|---|
| Cognitive biases | Knowledge may not be correctly interpreted or used due to biases in one's reasoning, such as listening only to those insights that confirm one's prior opinion | Tversky and Kahnemann (1974) |
| Decision problems | The decision maker may for example believe that he/she can make a complex decision right away without looking further at the provided analysis. | Russo and Shoemaker (1989) |
| Communication biases | The knowledge is inadvertently manipulated through communication itself:<br>• *Audience tuning*: Communicators spontaneously tune their messages to the personal characteristics of the audience, or the situational factors.<br>• *Misattribution bias*: Communicators tend to consider the audience-tuned messages to be about the topic of the message rather than about the audience.<br>• *Saying-is-believing effect*: Self persuasion has stronger effects because one does not activate regular mechanisms of critical reflection.<br>• *Shared reality*: You consider your audience-tuned message to provide objective, accurate information on the message topic because it was shared with others. | Higgins (1999) |
| Argumentation fallacies | In demonstrating one's ideas and insights, people fall into argumentative traps, such as beginning the question (circular reasoning), over generalizing, appealing to false majorities or false expertise, reasoning ad consequential (what should not be true, cannot be true) or reacting with direct attacks at a person (ad hominem) rather than at a knowledge claim. | Van Eemen and Gootendorst (1992) |
| Defensive routines | New knowledge is sometimes not accepted (or provided) due to mechanisms or habits that prevent the identification and acceptance of one's own ignorance. This may lead to a reduced effort to understand complex issues (learned helplessness). | Argyris (1986 and 1990) |
| Knowledge disavowal | A number of factors have been found which limit information use in organizations, such as not spending enough time collecting advice, refusal to share, fear of exposure, and so forth. Knowledge disavowal occurs when reliable and relevant information is not shared among decision makers. | Zaltman (1983), Deshpande and Kohli (1989) |
| Knowledge sharing hostility | Knowledge communication fails because the "knowledge givers" are reluctant to share their insights due to micropolitics, strenuous relationships, or fear. | Husted and Michailova (2002) |
| Micropolitics of knowledge | The "knowledge claims" of an expert are discredited by the decision makers due to their differing (hidden) agenda, because of a coalition of people with an alternative view, or due to the expert's lack of formal authority. | Lazega (1992) |

*Source: Eppler (2006)*

***Table 17: Knowledge transfer barriers (Cont.)***

| Key concept or knowledge transfer barrier | Description | References |
|---|---|---|
| Internal knowledge stickiness | Knowledge can sometimes not be transferred because of arduous relationships or casual ambiguities regarding the knowledge, or because of the lack of absorptive capacity of the knowledge receivers. | Szulanski (1999) |
| Groupthink | A (management) team may not truly listen to the input of an expert because of the team's group coherence, and group dynamics sometimes block outside advice and feel omniscient. | Janis (1982) |
| Information overload | An individual is sometimes not able to integrate new information into the decision-making process because too much complex information has to be interpreted too quickly. | O'Reilly (1980), Eppler and Mengis (2004) |
| Self/other effect | Individuals tend to discount advice and favour their own opinion. | Yaniv and Kleinberger (2000) |
| Knowing-doing gap/smart talk trap | Sometimes organizations know where the problem resides and how to tackle it, but do not move from knowledge to action (due to unhealthy internal competition or lacking of follow-up). | Pfeffer and Sutton (2000) |
| Absorptive capacity | Limited ability of decision makers to grasp the knowledge of the expert based on lack of prior knowledge. | Bower and Hilgard (1981), Cohen and Levinthal (1990) |
| Paradox of expertise | Experts find it sometimes difficult to articulate their knowledge or rephrase their insights in a way that a non-expert can understand. Sometimes experts indicate other rules than they actually apply. | Johnson (1983) |
| In-group out-group behaviour | We tend to interact more with likewise groups than with others, thus reducing our chances to acquire radically new knowledge. | Blau (1977) |
| Task closure | In our communication, we may choose to use a one-way communication medium because it permits us to close an open task without having to have a conversation. Thus leaner communication channels are used that may be necessary. In other words: We tend to want to close a communication process in order to complete an open task. | Straub and Karahanna (1998), Meyer (1962) |
| Set-up-to-fail syndrome | Managers are projecting their initial expectation of an expert's likely to performance unto him/her, leading to the self-fulfilling prophecy of (at times) lower performance. This is aggravated by demotivating feedback to the expert. | Manzoni and Barsoux (2002) |
| ASK syndrome | Anomalous State of Knowledge: When a decision maker does not have the knowledge base to really know what to ask for. People need to know quite a bit about a topic to be able to ask or search for relevant information. | Belkin (1980) |

*Source: Eppler (2006)*

***Table 17: Knowledge transfer barriers (Cont.)***

| Key concept or knowledge transfer barrier | Description | References |
|---|---|---|
| Not-invented-here (NIH) syndrome | Knowledge from other is sometimes rejected because it originated elsewhere. | Katz and Allen (1982) |
| Preference for outsiders | This is the opposite as the NIH syndrome and describes the tendency of managers to value outside knowledge higher than internal knowledge because it has a higher status, it is scarcer (because of difficult access), and it is less scrutinized for errors than internal knowledge. | Menon and Pfeffer (2003) |
| False consensus effect | We assume others see as we do, and fail to revise our framing. | Manzoni and Barsoux (2002) |
| Inert knowledge | The knowledge that the decision maker has acquired from the expert does not come to mind when it is needed or useful for decision making or actions. The transferred knowledge is stuck in the situation where it has been acquired. | Whitehead (1929) |
| Hidden profile problem | One often does not know other people's background (profile) – that is, what they know and could contribute to a problem's solution. The knowledge that is thus frequently shared in a discussion is what is expected by everyone. | Strasser and Stewart (1992) |
| Common knowledge effect | The tendency of a group to focus merely on commonly shared (rather than unique) pieces of information. | Gigone and Hastie (1993) |
| Lack of common ground | Common ground refers to the manager's and expert's assumptions about their shared background beliefs about the world. If those assumptions are wrong or inconsistent, communication becomes more difficult. | Clark and Schaefer (1989), Olson and Olson (2000) |
| Cassandra syndrome | The decision makers do not give sufficient weight or attention to an expert's warning because they face many other important problems. Only when the situation has deteriorated dramatically do they start taking the expert's advice. | Mikalachki (1983) |

*Source: Eppler (2006)*

***Knowledge protection***

Given that knowledge as a resource could be the source of competitive advantage only when it is rare and inimitable (Barney, 1991), processes that protect the business' knowledge are extremely important. As Chakravarthy *et al*. (2005) acknowledge, the size and durability of a firm's competitive advantage will be defined by how well its knowledge is protected.

The ability of the firm to protect its knowledge from illegal and inappropriate use is crucial to create and maintain competitive advantage (Liebeskind, 1996). Protecting knowledge means implementing processes oriented toward the preservation of knowledge within an organisation from illegal or inappropriate use or theft (Gold *et al*., 2001). These processes include seeking legal protection (e.g. via patents, trademarks and copyrights), designing policies to limit turnover, and educating employees about the types of knowledge they should not share with their peers in other organisations (Appleyard, 1996). Businesses could also make use of technological tools to restricts or track access to vital knowledge (Gold *et al*. 2001) as well as take a variety of actions to shape characteristics of their knowledge base which increase "stickiness" and imitation barriers, including tacitness, complexity, and specificity (Dierickx and Cool, 1989; Reed and Defillippi, 1990; Doz *et al*., 2001; McEvily and Chakravarthy, 2002).

### 3.5.2 Knowledge management enablers

Knowledge management enablers refer to the overall organizational factors and infrastructure that have a positive effect on knowledge management by stimulating and facilitating the development of knowledge management processes. They include facilitating, relationships and conversations as well as sharing local knowledge across an organization or beyond geographic and cultural borders. Knowledge management enablers could impact all knowledge management processes as they can stimulate knowledge creation, protect knowledge, and enable the sharing of knowledge in an organization (Lee and Choi, 2003). Stonehouse *et al*. (2001) point out that knowledge enablers are embedded in the business culture, structure and infrastructure.

While knowledge management enablers support and stimulate critical knowledge management processes (Gold *et al*., 2001; Lee and Choi, 2003) they cannot be fully leveraged without the existence of adequate knowledge management process (Gold *et al*., 2001). The combination of knowledge management processes and enablers is critical to reach the intended knowledge management objectives.

As in the case of knowledge management processes, there is a lack of a common set of knowledge management enablers. A review of the literature reveals a very broad range of knowledge management enablers that could potentially influence the success of knowledge management processes. The table below shows some of those enablers.

***Table 18: Knowledge management enablers***

| Author | Knowledge enablers |
|---|---|
| Pan and Scarborough (1998) | 1. Culture; 2. Structure, 3. Technology |
| Krogh *et al*. (2000) | 1. Instil a knowledge vision; 2. Manage conversations; 3. Mobilization of knowledge activists; 4. Create the right context; 5. Globalize local knowledge |
| Gold *et al*. (2001) | 1. Technology; 2. Structure; 3. Culture |
| Alavi and Leidner (2001) | 1. Culture; 2. Organizational; 3. Incentive IT |
| Laupase (2003) | 1. Organizational structure; 2. Culture; 3. Information technologies |
| Lee and Choi (2003) | 1. Collaboration; 2. Trust; 3. Learning; 4. Centralization; 5. T-shaped Skills; 6. Formalization; 7. Information Technology |
| Syed-Ikhsan and Rowland (2004) | 1. Organizational culture; 2. Organizational structure; 3. Technology; 4. People/human resources; 5. Political directives |
| Kim and Lee (2006) | 1. Organizational culture; 2. Organizational structure; 3. IT |
| Al-Gharibeh (2011) | 1. Organizational culture; 2.Knowledge strategy; 3. Knowledge leadership; 4. Information technology |

*Source: Own work*

Existing studies tend to coincide on the fact that *technology*, *structure*, *culture*, and *people* are four of the most important enabling factors of knowledge management capability (Gold *et al*., 2001; Lee and Choi, 2003).

***Technology***

In general, technology refers to the presence of information technology support within a business for the purpose of easing communication, collaboration, learning, and the quest for knowledge (Lee and Choi, 2003). Information technology could be classified in two categories: Those technologies that facilitate communication (e.g. e-mail, video conferencing, electronic bulletin boards, and computer conferencing) and technologies that help users make relevant decisions (e.g. decision-support systems, expert systems, and executive information systems).

When businesses start implementing their knowledge management efforts, it is very likely that they will start with the implementation of technological solutions, which allow them to capture,

systematize, integrate, organize and share corporate knowledge (Ruggles, 1998). Information systems are important for the storage and retrieval of information and explicit knowledge (Davenport and Prusak, 1998). Information and communication technologies (ICTs) are useful in overcoming the barriers of distance and time which affect some knowledge workers (Nonaka, 1991; Stough *et al*., 2000; Ruokonent, 2001), an increasingly important issue due to the impacts of globalisation, enabling collaborative teamwork, knowledge sharing and integration (Chesbrough and Teece, 1996). Inadequate implementation or over emphasis on technology could potentially inhibit the effectiveness of knowledge management programs (Leonard-Barton, 1995), particularly when it generates an exclusion of the human element (Moffett *et al*., 2002). It is therefore fair to assume that technology itself cannot become the driver of knowledge management initiatives, but technology must enable each knowledge management process in order for knowledge management to be effective.

Although an appropriate technology infrastructure is essential for effective knowledge management, studies that examine the link between information technologies and business performance are not conclusive, and fail to demonstrate whether technology has a direct link with performance (Powel and Dent-Micallef, 1997; Webb and Schlemmer, 2006). Research has, nevertheless, showed that when combined with other resources, technology can enhance performance and lead to sustained advantage (Clemons and Row, 1991; Powel and Dent-Micallef, 1997). So, although technology infrastructure may not contribute directly to organizational performance, it is an essential support to knowledge management processes such as knowledge generation, transfer, storage and protection (Saleim and Khalil, 2007),

***Culture***

Organisational culture could be defined as a pattern of basic assumptions that the group learns as it solves its problems of external adaption, internal integration and coordination (Schein, 1992; Martin and Terblanche, 2003). Organisational culture is composed of three building blocks: beliefs, values, and behavioural norms, and is probably one of the most important enablers for the development of knowledge management capability (Davenport and Prusak, 1998; Gold *et al*., 2001; Lee and Choi, 2003) as it allows the business to learn, develop memory, and share knowledge (Turban and Aronson, 2001).

DeLong and Fahey (2000) identified four ways in which organizational culture affects knowledge creation, sharing, and use. First, culture shapes assumptions about what knowledge is and which knowledge is worth managing. Second, culture defines relationships between individual

and organisational knowledge, determining who is expected to control specific knowledge, as well as who must share it and who can store it. Third, culture creates the context for social interaction that determines how knowledge will be used in particular situations. Finally, culture shapes the processes by which new knowledge with its accompanying uncertainties is created, legitimated, and distributed in organisations.

Martin (2000) indicates that the key elements of a knowledge culture are a climate of trust and openness in an environment where constant learning and experimentation are highly valued, appreciated and supported. Similarly, DeTienne *et al*. (2004) suggest that organizational culture is composed of collaboration, trust, and incentives that achieve knowledge sharing and transfer.

***Structure***

Businesses' organisational structure may encourage or inhibit the business' knowledge management capability (Hedlund, 1994; Nonaka and Takeuchi, 1995; Gold *et al*., 2001), as it acts not only as a channel for knowledge flows among individuals, but also can provide a platform for changing and improving these flows (Okhuysen and Eisenhardt, 2002). According to Nahm *et al*. (2003), organizational structure refers to the way in which responsibility and power are allocated and work procedures are carried out among employees.

The organizational structure makes possible the development and implementation of processes, and creates the formal framework of reporting and accountability through which the activities of the business can be planned, organized, directed and controlled.

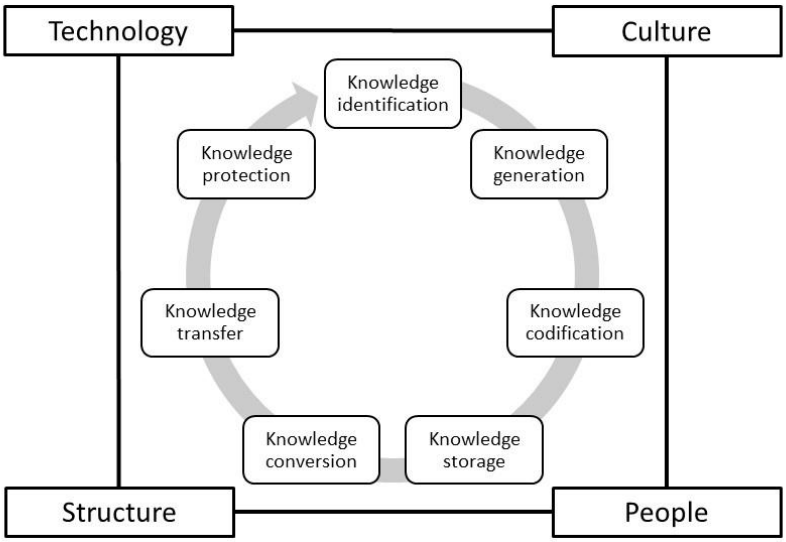
According to Schein (1971) business organizational structures have three dimensions: the *hierarchical* dimension (e.g. ranks), the *functional* dimension (i.e. different types of work), and the *centrality* dimension (e.g. distance from the central core of the business). Hierarchical structures tend to be characterized by rigid bureaucracy, which hinders the flow of information and promotes excessive specialization of work processes with the unwanted effect of obstructing integration and creating rigidities (Cross, 2000). This is particularly true in turbulent business environments (Drucker, 1995). On the contrary, organic structures seem to be better suited to cope with change due to their ability to create and adapt, allowing businesses greater flexibility without falling into chaos (Sawhney and Prandelli, 2002). Many researchers suggest that businesses need to transit from a hierarchical departmentalised structure to a flatter, organic, network type of structure in order to facilitate the transfer and creation of knowledge (Pemberton and Stonehouse, 2000; Gehani, 2002; Beveren, 2003).

***People***

Due to the fact that peoples' brains are the natural repository of knowledge, human resources are fundamental for the identification, creation, adaptation, and utilization of organisational knowledge (Chase, 1997; Holsapple and Joshi, 2001; Ndlela and Toit, 2001; Lee and Choi, 2003). People's skills have been classified with respect to their broadness and deepness of knowledge. Functional or disciplinary skills relate to deep knowledge, while those skills that can be applied across situations and interdepartmentally are termed broad knowledge (Truran, 1998). Professionals possessing both types of knowledge are known as T-shaped professionals, and they are extremely valuable to the business as they are able to integrate diverse knowledge assets (Leonard-Barton, 1995; Madhavan and Grover, 1998). These professionals are deep problem solvers in their own discipline of expertise, and also capable of interacting with and understanding specialists from other branches of knowledge. T-shaped skills enable their possessors to explore the link between their areas of expertise and various applications of that knowledge in particular products through convergent, synergistic thinking (Leonard-Barton, 1995), resulting in a significant and positive impact on knowledge creation process (Leonard-Barton, 1995, Johannenssen *et al*., 1999; Madhavan and Grover, 1998).

The figure below shows a graphical representation of knowledge enablers affecting the environment in which knowledge management processes are designed and implemented.

***Figure 6: Knowledge management enablers***




*Source: Own work*

## 3.6 Knowledge management in small and medium sized enterprises

Knowledge management is particularly relevant for SMEs, as they tend to be more dynamic and flexible than larger firms, as well as constrained by the lack of other resources. Shall SMEs decide to embark in the development of their knowledge management capabilities; they should expect to achieve better communications, improve their customer knowledge, shorten response times, gain efficiency, and reduce risks from the loss of critical knowledge (Knight and Howes, 2002). Research also shows that SMEs that strategically embrace knowledge management in a comprehensive and systematic manner are found to enhance their performance and competitive advantage, resulting in faster growth (Salojarvi *et al*., 2005; Egbu *et al*., 2005).

Despite these benefits, SMEs are lagging behind in the implementation of knowledge management practices. Beyond the limitations arising from the lack of resources (Herrmann *et al*., 2007), SMEs' lack of enthusiasm about knowledge management could be attributed to differences in values and perceptions. SMEs perceive the benefits of knowledge management as directly linked to the market rather than to the improvement of internal efficiency (McAdam and Reid, 2001). Furthermore, SMEs tend to have a more mechanistic view of, and a less systematic approach to knowledge management, assigning lower value to certain knowledge management practices, particularly the adoption of computer based knowledge storage systems (Lim and Klobas, 2000; Matlay, 2000). It is also important to point out that the knowledge generated by SMEs tends to be tacit in nature (Egbu *et al*., 2005), increasing the difficulties of its management.

A review of the literature shows that most of the research on knowledge management has focused on large businesses, and very few empirical studies have been conducted to identify the factors influencing knowledge management adoption in SMEs (Finkl and Ploder, 2009; McAdam and Reid, 2001). As Sparrow (2001) rightly points out, when attempting to develop their knowledge management capability SMEs will not necessarily face the same issues as larger firms. Desouza and Awazu (2006) identified five key peculiarities that differentiate knowledge management practices in SMEs and larger companies:

- SMEs tend to lack explicit knowledge repositories. Consequently, each person working in the business take the role of knowledge repository; increasing the vulnerability of the business to the turnover of key staff.

- SMEs benefit from local social capital and develop close social ties among employees to prevent employees leaving the business, and to create knowledge resources that can be mobilized to quickly fill the void, shall an employee decide to leave the firm.
- Due to the resource constraints faced by SMEs, these firms tend to focus more on the "human side" of knowledge management, rather than in the utilization of sophisticated technological tools to facilitate knowledge management.
- Shared knowledge within the SMEs tends to be deep and broad, facilitating knowledge transfer, sense-making, retention, and application.
- Due to the constraints imposed by the lack of resources, SMEs tend focus more on the acquisition of external knowledge rather than in the internal development of knowledge.

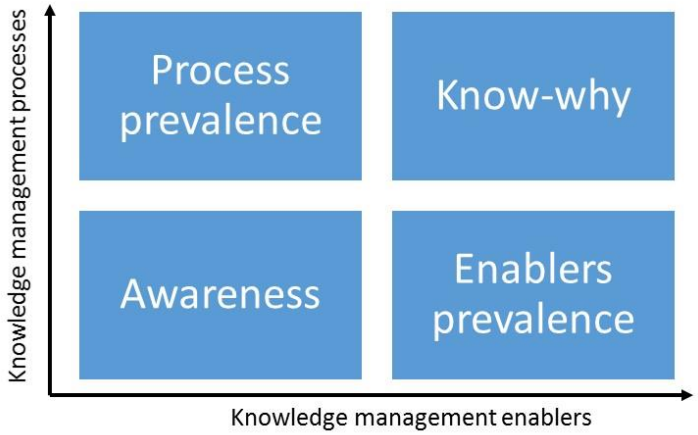
In an attempt to throw light on the differences between SMEs and large firms, Wong (2005) and Wong and Aspinwall (2005) propose a set of 11 critical success factors that SMEs should address when planning and developing a knowledge management strategy: 1. management leadership and support; 2. organizational culture; 3. IT; 4. strategy and purpose; 5. measurement; 6. organisational infrastructure; 7. processes and activities; 8. motivational aids; 9. resources; 10. training and education; and 11. human resources management.

When thinking in terms of the knowledge management processes previously identified, we see that SMEs could potentially have some operational advantages in the implementation of such processes. Due to their strong social networks and the close and direct contact they have with customers, SMEs are in privileged position to gather knowledge and information about customers and competitors (Haksever, 1996; Wong and Aspinwall, 2004). Generally speaking, the informal communication culture that prevails in most SMEs discourages the classification and documentation of knowledge. It is a common belief among SME managers that it is not feasible to establish a formal system for codifying, organising and storing knowledge because their employees are busy with their daily routines (Wong and Aspinwall, 2004). Additionally, SMEs tend to lack the necessary physical and financial resources needed to maintain an adequate knowledge repository. As a result, knowledge is stored in the minds of managers and employees. On the positive side, the reduced size of SMEs is associated with a reduced amount of knowledge they need to manage, resulting in a need of simpler mechanisms to organise and store knowledge (Wong and Aspinwall, 2004). Transferring of knowledge is likely to be easier in SMEs as they have less complex organizational structures, and employees are often in close

contact with each other, making two-way communication the norm and facilitating the build-up of knowledge networks.

It would be possible to assess the degree of adoption and maturity of knowledge management initiatives by looking at two variables: 1. the adoption and maturity of knowledge management processes; and 2. the degree to which knowledge management enablers are present in the company.

***Figure 7: Knowledge management adoption***




*Source: Adapted from Lee and Lan (2011)*

The four quadrants represent the four maturity levels of the knowledge management capability in any firm. The top right quadrant shows the ideal and most mature case where a company has properly developed all the necessary processes to manage knowledge, and has built the necessary enablers to ensure maximum effectiveness of the processes. The bottom left quadrant illustrates the situation of a company that is aware and concerned about the significance of knowledge management but has not taken any steps towards the development of the capability. The remaining two quadrants represent intermediary steps towards the full development of a knowledge management capability where either processes or enablers are the focus of the business' efforts.

## 3.7 Chapter summary

The following box attempts to provide a quick summary of the most salient topics that were discussed in this chapter.

***Box 13: Summary of chapter 3***

The business competitiveness, business growth, and business internationalization literatures assign to knowledge and its management hold a predominant place in their theoretical constructions. Current research suggests that it is only through adequate management of VRIN knowledge SMEs could attain their goal of becoming competitive in domestic and international markets.

The successful development of a knowledge management capability is the result of the implementation of a group of seven generic business processes adequately supported by an enabling environment.

Knowledge is difficult to manage as it is hard to measure, tends to be context specific, is dispersed across the SME, is embedded in peoples' brains, and requires people to have a certain level of absorptive capacity to benefit from it. Most of all valuable knowledge is also tacit knowledge that is gained through experience and is difficult to transfer.

***SME knowledge management practices that hinder competitiveness***

- SMEs lack enthusiasm to implement knowledge management initiatives.
- SMEs usually fail to implement holistic knowledge management initiatives.
- SMEs tend to lack explicit knowledge repositories, which makes them highly vulnerable to knowledge loss resulting from high employee turnover.
- SMEs focus more on external knowledge acquisition than on internal knowledge development.
- SME's tend to focus on the human side of knowledge management (i.e. people and culture), weakening the proper development of structural and infrastructure-related enablers (i.e. technology and structure).

***SME knowledge management practices that foster competitiveness***

- SME's close ties with employees favour knowledge protection and flow within the organization.
- SME's close contact with the market favours the acquisition of relevant market information and knowledge.
- SME's high levels of social capital and participation in networks facilitated knowledge acquisition.

# CHAPTER 4: GAPS IN THE LITERATURE AND RESEARCH QUESTIONS

## 4.1 Issues that need attention

Despite the existence of abundant scholarship in the three domains studied in this work, there are various questions for which an adequate answer has not yet been provided. This is particularly true on the intersection of the three domains where several interesting, feasible, and not adequately explored topics could be identified.

Notwithstanding the existence of performance differentials between exporting and non-exporting firms (Bernard *et al*. 2007; Mayer and Ottaviano, 2007; Wagner, 2007), there is no consensus on whether international and domestic businesses should be analysed with different theoretical structures. The current literature has neither fully identified nor explained what capabilities are needed for the internationalization of small and medium sized enterprises. Some authors have opted for describing the "international version" of processes that can be found in any domestically oriented enterprise. Additionally, there is still a notorious lack of understanding of the role of dynamic capabilities in the development of international business competitiveness. It is not clear what dynamic capabilities are needed, how they interact with each other, and how they evolve over time.

## 4.2 Research questions

By reviewing existing literature and carefully assessing the conclusions reached by other researchers, it has been possible to narrow the research topic and come up with meaningful research questions. These research questions provide focus to the study and clarify the direction of the theoretical and empirical work.

The research questions that guide this work explore a specific component of a broader topic area. They address not only unresolved issues, but topics whose exploration could lead to meaningful contributions to existing theory and practice. Furthermore, they provide an indication of what the most appropriate research methodology is and what evidence collection tools should be used. Section two of this work will attempt to provide a theoretical and empirical answer to all research questions formulated below.

### 4.2.1 Research question 1

*Does the international business need to develop unique capabilities to succeed in international markets over and above those needed to succeed in domestic markets?*

This research question tests Penrose's hypothesis that the differences between domestic and international firms do not require a different theoretical constructs to analyse them. Some authors argue that those SMEs which successfully internationalise, and particularly those that do it in a reduced length of time, must develop the *capability to internationalise* (Chetty and Campbell-Hunt, 2004), or a *firm-specific idiosyncrasy* (Jones and Coviello, 2005) that allows such success. These terms are too broad to be operational and provide little insights on what it is that SMEs need in order to successfully internationalise. Despite the central role firm capabilities have in the business competitiveness literature, little is yet known about the capabilities a firm must possess in order to successfully internationalize. Furthermore, the lack of consensus on whether certain unique capabilities are needed to succeed in international markets has generated the identification of a wide array of, sometimes overlapping, capabilities (Vahle and Johanson, 2013; Frasquet *et al*., 2013; Johansen and Knight, 2010; Prange and Verdier, 2011; Knight and Kim, 2009; Weerawardena *et al*. 2007). If theoretical discussion is to evolve in an operational manner such that it provides valuable tools and solutions for SME managers, an agreement needs to be reached on the number and nature of capabilities required for internationalization, and their degree of uniqueness.

If Penrose's hypothesis is correct, one would expect to find evidence that:

1. when businesses internationalize, they don't need to develop capabilities unique to international markets;
2. the capabilities needed to become competitive in domestic and international markets are in essence the same, and only morphological changes are needed when entering international markets. These morphological changes are organizational responses to the increased level of dynamicity and complexity that characterizes international markets.

Testing this hypothesis will be done in two ways: First we will construct a resource-and-capability-based model for the purpose of analysing how domestic and international businesses construct their competitive advantage, and provide a theoretical answer to this question. Furthermore, the theoretical model we will also help us understand how the relevance of capabilities changes as the enterprise moves from domestic to international markets, and what dynamic capabilities become critical for success in international markets. The theoretical model will later be used as the tool to analyse all empirical evidence collected at the enterprises, and by testing its validity it will provide an empirical answer to the research question.

### 4.2.2 Research question 2

*Does the existence of knowledge management capability allow the manager of an exporting SME break the path-dependency of its strategic internationalization decisions by enlarging the firm's productive opportunity set?*

This question is related to the mechanisms through which knowledge management capability affects the internationalization strategy of the business, and the effect it has on the rage of opportunities ready to be exploited perceived by the manager. In order to adequately address this question one should first clarify certain concepts:

- Path-dependency of strategic internationalization decisions;
- Productive opportunity set; and
- The way these two factors affect the internationalizing firm.

#### *A. Path-dependency of strategic internationalization decisions*

The theory of path-dependency refers to organizational rigidities and structural inertia, and highlights the impact of former decisions and solutions, even by random events, in present and future realities. Hence, decisions are conceived as historically conditioned. Most references to path dependence could be found in connection with institutional and evolutionary accounts of organizational change (Lewin and Volberda, 1999; Marquis, 2003; Rodrigues and Child, 2003; Volberda and Lewin, 2003) where self-reinforcing processes act as drivers that are likely to accumulate in a specific path of action. Moreover, certain processes and their underlying decisions may eventually lead to an irreversible state beyond the control of the manager. In that sense, managers may believe that enterprises' best possible strategy is not to try to challenge their history, but rather to allow evolution to take place (Volberda *et al*., 2001; Volberda, 2004).

Path dependence, however, is supposed to mean more than the mere existence of timeworn routines, cognitive rigidities, or structural inertia, as path dependence arises as a consequence of firms' bounded rationality (Cyert and March, 1963). Various studies have highlighted cases of persistence and irreversibility of organizational strategies, designs, and competences by drawing, for instance, on awkward routines, groupthink, or fixed cognitive maps (Beckman and Burton, 2008; Bruggeman, 2002; Collinson and Wilson, 2006; Gilbert, 2005; Hannan and Freeman, 1984; Helfat, 1994; Huff and Huff, 2000; Stimpert *et al*., 1998; Tripsas and Gavetti,

2000). Path dependence has critical strategic implications for the business. The occurrence of a *lock-in* renders a business potentially inefficient due to the loss of the capability to adopt better alternatives as it is confined to the existing path of action, which binds it to historical solutions (Leonard-Barton, 1995; Schreyögg and Kliesch-Eberl, 2007). Path dependence refers to the narrowing of the range of options available to the manager, and an initial decision that progressively becomes difficult to reverse. In order to reduce their cognitive burdens and simplify information processing managers tend to rely heavily on recent strategies (Steiner and Rain, 1989; Amburgey and Miner, 1992; Hogarth and Einhorn, 1992). As a consequence, one particular choice or action pattern becomes the predominant mode, and even new entrants into this field of action cannot refrain from adopting it. At this point flexibility has been lost[14].

From a purely operational standpoint it is easy to find a rational for path dependence based on resource endowments. At each point in time the growth of the business builds on its inherited resource and capability endowment, and because there "*... is a close relation between the various kinds of resources with which the firm works and the development of the ideas, experience and knowledge of its managers and entrepreneurs*" (Penrose, 1959), the firm's growth will most likely occur within close neighbourhood of the firm's existing capabilities.

All human activity and organizational processes are imprinted by their history in a way or another; therefore, for a full understanding of the path-dependency notion, one should couple it with the concepts of *increasing returns* and *lock-ins*. Increasing returns implies positive feedback; in other words, the notion that the increase of a particular variable leads to a further increase of this very variable (Arthur, 1989 and 1994). In general, according to Nachum (2003), increasing returns might "*occur due to three reasons: 1. High fixed costs and very low variable costs; 2. Network effects, that is, the value of a product increases with the number of users; and 3. High switching costs*". More specifically, the notion of increasing returns refers to a self-reinforcing process with a spiral form of dynamics that is beyond the control of the individual actor and may eventually lead to a *lock-in* (David, 1985) or *inflexibility* (Arthur, 1989). When a lock-in occurs, the range of feasible alternatives available to the business reduces considerably. Other factors that also contribute to the development of self-reinforcing patterns in businesses are (Sydow *et al*., 2009): 1. Emotional reactions (uncertainty avoidance, intergroup revenge, etc.); 2. Cognitive biases (selective perception, blind spots, implicit theories, etc.); and 3. Internal political processes (gaining and maintaining power, reciprocal negotiation, etc.).

[14] A striking example of such path dependence was provided by Tripsas and Gavetti (2000), who portrayed the difficulties Polaroid experienced in changing their R&D priorities into a new product development competence.

Path dependence is challenged by theoretical approaches that focus on adaptation and managerial discretionarily, and argue that internationalization paths are more adaptable and less determined by path dependencies (Volberda and Baden-Fuller, 2003). A substantial body of work suggests that firms actively take actions to change their strategic direction, overcoming internationalization barriers and limitations such as the liability of foreignness and psychic distance. For example, learning theories assume that internationalization paths are both adaptive and manipulative, in the sense that organizations adjust defensively to reality, and use the resulting knowledge offensively to improve the fit between the organization and the environment (Hedberg, 1981; Fiol and Lyles, 1985). Teece *et al*. (1997) suggest that the mechanisms by which firms accumulate and transfer new skills and capabilities are the key to business adaptability. As Hutzchenreuter *et al*. (2007) suggest the performance of born global firms give an incentive to shift the focus of attention from path dependent internationalization trajectories to the mechanisms by which path creating internationalization trajectories are developed. This research work suggests that the business knowledge management capability is the key mechanism by which the business develops such trajectories.

The ability of the business to break free from history and create new paths for internationalization (i.e. expand their productive opportunity set) is closely linked with the way the business learns, shares and interprets information and know how, as well as how it uses knowledge to reconsider the appropriate mode of internationalization (Best, 1990; Van Den Bosch *et al*., 1999 and 2003). A business' absorptive capacity plays an important role in the business' international expansion (Lewin and Volberda, 1999) as this capacity influences the expectation formation process (Van Den Bosch *et al*., 1999 and 2003). Cohen and Levinthal (1990) suggested that the higher the absorptive capacity, the more likely it will be that a firm's aspiration level or expectation formation process will be defined in terms of international opportunities independently of current performance criteria such as profitability. The authors go a step further and suggest that firms with higher levels of absorptive capacity will tend to be more proactive. Firms with high aspiration levels and absorptive capacity are more likely to develop more idiosyncratic internationalization paths.

### *B. Productive opportunity set*

As previously mentioned, at the heart of Penrose's theory is the fundamental assumption that growth is limited by a firm's productive opportunity set, which comprises all of the productive possibilities that its entrepreneurs see and can take advantage of. The productive opportunity set is determined by the ways in which the managers are able to combine the resources at their disposal to produce productive services. It is clear that the productive opportunity set will be

bounded by the firm's ability to identify opportunities for expansion, its willingness to act upon them, and/or its ability to respond to them.

Penrose uses the term *entrepreneur* to refer to individuals or groups within the firm, independently of their position or occupational role, providing entrepreneurial services. Penrose defines entrepreneurial services as contributions to operations which relate to the introduction and acceptance of new ideas about products, location, significant changes in technology, acquisition of new managerial personnel, fundamental changes in the firm's administrative organization, fundraising, and plans for expansion, including the method of expansion.

Although the *objective* productive opportunity set of a firm is limited by what the firm is able to accomplish given its existing resources and capabilities, the *subjective* productive opportunity set is a result of what managers think it can accomplish. Entrepreneurship is by nature a very idiosyncratic endeavour as it is based on preferences, judgment, willingness to see and act, access to information, and knowledge based on previous decisions and actions. Managers make subjective assessments about market conditions and the firm's strengths and weaknesses. These assessments are influenced by the manager's perceptions. The manager's *image* of the opportunity gives rise to the firm's *subjective* productive opportunity set and drives firm heterogeneity and differential absorptive capacity (Boulding, 1956).

The notion of productive opportunity set and the ability of the managers to seize opportunities are also present in the firm's financial valuation literature. Real options theory tells us that the firm could be understood as a combination of existing assets and future investment opportunities. Existing assets refer to the actual assets recognized in the balance sheet. Future investment opportunities are those unobservable growth opportunities or options available to the firm at each point in time. Myers (1977) describes these potential investment opportunities as call options whose values depend on the likelihood that management will exercise them. These call options are intangible assets or ownership advantages that represent the firm's productive opportunity set. The larger the productive opportunity set, the higher the value of the call options, and the more likely the firm will show good performance levels.

Penrose suggests that: "*If we can discover what determines entrepreneurial ideas about what the firm can and cannot do, that is, what determines the nature and the extent of the "subjective" productive opportunity of the firm, we can at least know where to look if we want to explain or to predict the actions of particular firms*" (Penrose, 1959). Clearly, the decision to search for opportunities that would enlarge the productive opportunity set is an entrepreneurial decision requiring intuition and imagination. Managerial expectations, not necessarily always based on

facts and limited by the availability of information and the manager's cognitive capabilities, play a crucial role as determinants of a firm's behaviour. The success of a firm's plans depends only partly on their execution and partly on whether they are based on sound judgment about the possibilities for successful action (Knight, 1921; von Mises, 1949). Penrose viewed people as being the most important resource on any business, as it is their knowledge and insights that determine the future productive opportunity set of the firm. Furthermore, she argues that the theory of the growth of the firm is nothing but a close examination of the changes of the firm's productive opportunity set over time. Learning and knowledge management capabilities play a fundamental role in the expansion of the productive opportunity set, by allowing the manager not only to *see* opportunities but also to make better risk assessment and judgments.

As Foss (1997c) points out: "…*firm development is essentially an evolutionary and cumulative process of "resource learning" (Mahoney, 1995), in which increased knowledge of the firm's resources both help create options for further expansion and increases absorptive capacity (Cohen and Levinthal, 1990)*". Furthermore, it is the application (Spender, 1994) of the firm's resources that create value to the firm, and not its acquisition (Barney, 1986) and/or protection (Peteraf, 1993).

### *C. The case of the internationalizing business*

International markets are characterized by higher competitive pressure than domestic markets (Prashantham, 2005), as a result market knowledge becomes obsolete very quickly. Despite this, there are still few works that have investigated the effect of knowledge in exporting companies and their outcomes (Morgan *et al*., 2003; Martín *et al*., 2009).

According to path-dependency, early steps in the internationalization process limit the rate and the direction of firms' knowledge accumulation. What firms learn in the future, where they seek information, what information they seek and to what extent, are all contingent upon the stock of knowledge and the absorption capacity that they develop in the early years of their internationalization (Eriksson *et al*., 2000).

Foreign market entry requires the collection, interpretation and absorption of relevant knowledge (Haspeslagh and Jemison, 1991). During the firm's interaction with specific counterparts in ongoing business activities in the foreign market, problems are dealt with, new ideas are created and knowledge is gained (Holm *et al*., 1996). The internationalizing firm accumulates this knowledge through a process of *grafting*[15] (Huber, 1991). The absorptive

[15] Grafting knowledge denotes that new knowledge often comes to an organization in the form of a new person and not as "pure" or impersonalized knowledge.

capacity (Cohen and Levinthal, 1990) and the routines of the firm are modified and new options are generated (Chang, 1995).

The internationalization of firms is path dependent because it is determined by the reciprocal interaction of the firm and its business relationships. Past experiences lead to current and future commitment of resources; and past experiences are conditioned by the firm's behaviour and that of its competitors, as well as by the firm's view of the relationships it has with other actors in the market (Weick, 1969). The firm's perceived world view is, therefore, integrated in its experiential knowledge gain and in its commitment of resources. Pennings and Harianto (1992) and Lane and Lubatkin (1998) have shown the importance of current experience in valuing, assimilating and commercializing new knowledge. As a result, firms develop a *dominant logic* (Prahalad and Bettis, 1986) that mutates over time at a very slow pace. Based on their previous experiences, businesses develop a preference for certain strategies, risk levels, types of commercial practice and types of project. This "specialization" limits the firm's ability to manage assignment, clients and/or markets that deviate from the "norm" (Leonard-Barton, 1992).

Firms that acquire a richer stock of knowledge find the task of absorbing and exploiting opportunities abroad relatively simple (Teece, 1986). When it comes to strategic decisions related to the internationalization process of the business, path-dependency could be seen in the repetition of modes of entry and the market selection. The level of international ambidexterity (Prange and Verdier, 2011) could be an indicator of a wider productive opportunity set.

From all of the above we could conclude that firm's path-dependency is simultaneously affected by two opposing forces. On the one hand specialization and learning by doing reduce the perception of risk and the costs of continuing on the same path; generating a tendency to strengthen path dependence. On the other hand, an increase in the firm's absorptive capacity could potentially lead to the expansion of the opportunity set and a reduction in path dependence. This leads us to think that the degree of effectiveness and efficiency, and the "shape" that knowledge management processes take (i.e. knowledge management processes could be very strong in storing and sharing knowledge, but relatively bad at identifying and processing existing knowledge, and ignoring new knowledge generation), would determine which force would prevail.

### 4.2.3 Research question 3

*Does the existence of knowledge management capability facilitate the improvement of existing, and development of new, capabilities (operational or dynamic) critical for the success of the export business?*

A central preoccupation of business managers is to maintain their business aligned with what the market dictates (Learned *et al*., 1969; Miles and Snow, 1978). In order to achieve this goal the business should be able to mutate and adapt itself to new environments by means of changing its processes and resource base. Dynamic capabilities, by allowing continuous development, alignment and reconfiguration of firm-specific assets (Teece and Pisano, 1994; Teece *et al*., 1997; Augier and Teece, 2006) provide businesses with this needed flexibility, increasing the firm's survival chances and generating growth potential (Helfat *et al*., 2007). When thinking in terms of highly dynamic international markets, it is fair to argue that businesses that are able to anticipate and adapt to market changes have better chances to grow and to be profitable.

This research question is operational in nature as it aims to determine the existence of a causal relationship between the firm's knowledge management capability and the speed and degree of development and adaptation of other important capabilities for internationalization and growth.

The growth rate of the firm is the result of the productive opportunity set and by the *adjustment costs* of growth. The productive opportunity set was the focus of the first research question. Adjustment costs are directly linked with the utilization and development of managerial capabilities (i.e. the capabilities to manage the resources of the business). Penrose (1959) argued that the rate at which the firm can develop its managerial capabilities sets the ultimate limit to its growth, even if the productive opportunity set is immense. Hence, another way to reformulate this research question would be to ask whether the existence of knowledge management capabilities reduces the adjustment costs of growth.

In order to determine whether the development of knowledge management capability within the business would have an effect on the improvement of existing and/or development of new capabilities we should look at the effect knowledge management has on the processes that shape those capabilities. Since the impact of knowledge management capability is likely to be primarily observed on the outcomes of the processes it supports, this research question looks at the relationship between knowledge management and the morphology, effectiveness and

efficiency of business processes. This work will focus on set of business processes that are the foundations of the critical capabilities[16] needed for internationalization as viewed by the managers. Within those processes, we will focus on the ones that make intensive use of knowledge (i.e. where the application of knowledge is an integral part of the activities that make up the process).

The effect of knowledge management capability on business process will show in an improvement of the effectiveness and efficiency in which the process in question generates its expected output, and potentially in a change in the morphology of the process. Indicators of process effectiveness and efficiency will have to be identified for the selected knowledge intensive processes.

The analysis of capabilities and processes should be done in an integrated manner in order to identify communicating vessels between capabilities. For example: The switch from less complex direct exports to more complex direct exports (e.g. from importer, to distributor, to establishment of business agent in the foreign country, independent agents selling on behalf of the exporter, representation office abroad, commercial delegation) is clearly a morphological change in the capability to distribute products and or services. This change could also be seen as a hint that other capabilities are mutating as a change in the market entry mode would require the adaptation of existing or the development of new processes (e.g. development of business contacts, market/marketing research, export documentation management, pricing policies, brand management, etc.).

This question also seeks to determine if the knowledge management capability has been instrumental in the development of new capabilities.

[16] The business strategy will determine which capabilities are critical.

### 4.2.4 Summary of research questions

***Box 14: Research questions***

***Research question 1:***

Penrose's notion that the differences between domestic and international firms do not require a different theoretical constructs to analise them, coupled with the importance of dynamic capabilities, lead to the elaboration of the first research question of this work:

> *"Does the international business need to develop unique capabilities to succeed in international markets over and above those needed to succeed in domestic markets?"*

To answer this question it will be necessary to construct a holistic theoretical model, encompassing all areas of the business. Then, it will be necessary to determine whether changes are required to catter for the singularities of international businesses. This work will be undertaken in the next chapter. The resulting model will then be used to analyse the different business cases in the empirical part of this research work.

***Research question 2:***

> *"Does the existence of knowledge management capability allow the manager of an exporting SME break the path-dependency of its strategic internationalization decisions by enlarging the firm's productive opportunity set?"*

This question refers to the relationship between the knowledge management capability and strategic capabilities, and addresses Penrose's notion of productive opportunity set, its subjectivity, and malleability through proper knowledge management.

***Research question 3:***

> *"Does the existence of knowledge management capability facilitate the improvement of existing, and development of new, capabilities (operational or dynamic) critical for the success of the export business?"*

This question addresses the relationship between the knowledge management capability and other dynamic and operational capabilities, and it addresses the mechanics by which dynamic capabilities support the business adaptation to market changes.

## 4.3 Why does it matter?

It is clear that the mere existence of a legitimate gap in the literature does not necessarily imply that the three research questions identified above merit pursuit. If the research work is to be

conducted, and the investment in time, energy, and resources justified, one would expect that the research has important theoretical and practical implications.

This research work, through the model that will be presented in the following chapter and the supporting evidence presented in the subsequent chapters, could improve existing management practice and support the decisions made by entrepreneurs while managing their businesses. From a practitioners' point of view, one of the main problems of current business literature is the proliferation of independent methodologies and tools without a framework that structures and organizes the thinking process. Each business scholar provides her own definition of the terms used, and in most of the cases provides a partial analysis of the business without clear guidance of how to link it to existing literature. A study that successfully identifies all business capabilities, provides a clear reasoning for their development, and explains the relation between them, would certainly facilitate the work of business managers in their quest for competitiveness. This research work could also provide some order and structure in the academic discussions about capability development in domestic and international SMEs.

# PART TWO

# CHAPTER 5: A MODEL TO ANALIZE THE DRIVERS OF SMEs INTERNATIONAL COMPETITIVENESS

## 5.1 Introductory remarks

This chapter presents the first important contribution of this dissertation, as it offers a new theoretical framework to analyse the drivers of SME international competitiveness. Using this model we will try to provide a theoretical answer to the three research questions proposed in the previous chapter before we attempt to provide an answer based on empirical evidence. One important prerequisite of the model would be that it is in line with the theory discussed in the introductory chapters of this dissertation. After all, the literature review undertaken earlier has allowed us to identify key driving forces of international competitiveness that could help us interpret reality and should be present in the model.

Before advancing any further, it is important for the reader not to fall in the semantic trap of confusing a business model with a model to understand businesses. The notion of business model is linked to strategic management, and is generally understood as a description of how a business creates, delivers, and captures value. The purpose of this chapter is to build a theoretical construct (i.e. a model) to describe businesses, and to analyse the complex dynamics that take place within its boundaries and between a business and its environment, for the purpose of easing the research process, theorize, and fit theories to empirical evidence.

Like any other model, a model that seeks to help researchers and practitioners to know and understand the structure and functioning of a businesses will unequivocally be a simplification of reality and will address only some aspects of the phenomenon in question. If the model is properly designed it will provide a conceptual representation to analyse the structure of the business, as well as the various complex processes that are performed and the relationship between them. The model should be a tool to assist in the interpretation of reality and the understanding of complex theories.

The model presented in this chapter understands the business as a system of interdependent parts that form an integrated whole, and that that together are capable of generating outputs not attainable by each part in isolation. In addition to the identification of all the constituent parts of a business, the model will provide a structure, which is fundamental to understand the nature, patters, and driving factors of the relationships among each of the parts that constitute the whole. The model will explain which capabilities need to be developed, why they need to be developed, how they are developed, and will help readers understand the importance of dynamic capabilities in the attainment of international competitiveness. The model is not based on the study of cases that try to identify and analyse patters among successful enterprises, but

on the contrary, is an axiomatic model that builds on generally accepted premises in order to consistently describe a business and derive theorems. By doing this, we avoid making restrictive and unrealistic assumptions that could later limit the validity of the recommendations given by the model.

The model should be assessed first and foremost by its consistency to fit empirical data, and its ability to explain and identify outcomes based on the theoretical relationships built in the model. The empirical part of this dissertation will conduct such validation exercise, and will put to the test the decisions made by the researcher *vis-à-vis* the simplicity and accuracy trade-off.

Some researchers, mostly in economics but not so much in business, have used mathematical concepts and language to describe different types of complex systems. Mathematical modelling and quantitative analysis have been extensively used in management studies to solve a wide variety of specific management problems, particularly in finance, logistics, process improvement, and inventory control. When it comes to the holistic analysis of a business and the need to provide strategic guidance, researchers have opted to use conceptual and graphical representations rather than mathematical constructions. Given its intended purpose, the model presented in this chapter will be constructed without the need to use mathematical tools.

## 5.2 A capability-based model to understand SME's international competitiveness

The importance of knowledge and knowledge management has been explained in previous chapters, and despite their importance it is clear that in isolation they cannot guarantee competitiveness. Knowledge must be combined with a sound strategy and an effective and efficient development of the necessary capabilities. Despite the central role firm capabilities have in the business competitiveness literature, little is yet known about the capabilities a firm must possess in order to successfully internationalize. An important gap exist in the literature at the crossroads of dynamic capabilities and business internationalization as "...*we neither completely understand which capabilities enable SMEs to be internationally active at all, nor do we know the elements of their international competitive advanta*ge" (Gassmann and Keupp, 2007). There is a need to identify those specific capabilities early internationalizing firms need to successfully enter and grow in international markets (Zahra *et al*., 2000; Ethiraj *et al*., 2005) and understand how they evolve (Easterby-Smith *et al*., 2009). The model presented in this chapter will address this gap in the literature, as it will identify all of the business' capabilities, it will provide a logic for their development, and will determine which ones are key for the development of international competitiveness.

Penrose (1987) believed that domestic and international firms were intrinsically the same and there was no need to build separate theoretical frameworks to understand them. Penrose's views are also in line with Teece (2009) who believes domestic enterprises are special cases of multinational enterprises, and that the study of international businesses should not be divorced from the study of domestic businesses. Despite being a proposition introduced almost three decades ago, the business literature has not yet provided a clear positive or negative answer to whether domestic and international firms can be analysed using the same theoretical framework. In order to test Penrose's idea, this section will present a model that explains how SMEs develop competences and capabilities with the aim of building competitive advantage [17]. The model will propose a set of capabilities and processes that allow a generic single-business enterprise to develop competitive advantage in domestic markets. By doing this, the model will also marginally address another gap in the literature as the interrelated processes that constitute capabilities are rarely identified (Galunic and Eisenhardt, 2001). After introducing the model, the chapter will proceed to analyse whether new competences, capabilities and processes are needed to succeed in international markets.

Before proceeding any further it is important to remind the reader that a business that manages to develop sustained competitive advantage is an oddity. The definition of competitiveness given at the beginning of this dissertation makes operational excellence in production and marketing processes a necessary but not sufficient condition for sustained competitive advantage. According to the Basque Statistics Office[18] (EUSTAT) the number of enterprises in the Basque Country in 2014 was little over 159.000. It is widely acknowledged that Basque enterprises are among the most effective, efficient, and innovative when compared with enterprises in the rest of Spain. How many of those enterprises have been able to consistently become the preferred suppliers in the market and shape future markets (i.e. achieve sustained competitive advantage) is a question that has not yet been answered.

From a purely mechanical point of view, competitive advantage is built through the careful development of competences, capabilities, and processes. Unfortunately, a mechanical approach to competitiveness would fail to provide the necessary answers to guide researchers

[17] This model finds its intellectual roots in the work done by the International Trade Centre (2005) to assist internationalizing SMEs and the work done by the American Productivity and Quality Center (2014) to identify and categorize business processes.
[18] www.eustat.es

and practitioners. In order to understand how businesses develop competitive advantage we need to understand why businesses are created and how they achieve their objectives.

Businesses are created to make money, and all other goals are relegated to a secondary level of importance. In this work we are interested in understanding how businesses become competitive, and sustained competitive advantage has been partially defined as the consistent achievement of above normal rents. A business that consistently achieve above normal rents is a business that has managed to adapt to its environment, reinvent itself, and beat competition in a sustained manner.

***Figure 8: The mechanics of building competitive advantage***


*Source: Own work*

The business makes money by engaging in market transactions with their clients[19]. This is the fundamental independent axiom on which the model is built, and is the key statement that leads the deductive reasoning process. If businesses make money by performing market transactions they need to be able to produce something (i.e. the offer) to exchange, and find someone to exchange it with (i.e. the client). Consequently, the business must have two competences: production competence to manufacture an offer, and marketing competence to find and retain clients for that offer. The characteristics of those competences will be determined by the business strategy, as it is the business strategy the one that will identify a segment within the

[19] Making money is the goal of the business, the best way to make money is to aim at becoming competitive as it will also boost its chances of survival and growth. We will see in the empirical part of this dissertation the case of an enterprise that while making money, is not focused on becoming competitive (as per the definition of competitiveness given in chapter one of this work) and therefore, its life has been a constant struggle for survival with very small profit margins. Survival and profitability are necessary but not sufficient conditions for competitiveness.

population of consumers with similar needs, purchasing habits and product expectations, as well as the characteristics of the offer to meet those unmet needs. Strategies enable the SME to manage its relationships with the external environment, and serve as a guide for the firm's value-creating processes in all functional areas of the business (Swamidaas and Newell, 1987). The business is able to do all these thanks to its strategic competence.

To develop its strategic competence the SME[20] should have the capability to design and plan a business strategy, to identify and put in place the most appropriate functional structure, and to innovate and dynamize its existing capabilities (Schreyögg and Kliesch-Eberl, 2007). By allowing the manager to undertake her entrepreneurial responsibilities the business' strategic competence shapes the productive opportunity set. Table 19 shows the capabilities and processes needed to develop strategic competence, and helps clarify the notion that what is important is the portfolio of capabilities that build competences rather than each capability in isolation (Geroski, 2005).

***Table 19: Strategic competence, capabilities and processes***

| Competence | Capabilities | Processes |
|---|---|---|
| Strategic competence | Design a business strategy | Generation, evaluation, and filtering of business ideas |
| | | Market identification |
| | | Market segmentation |
| | | Segment selection |
| | | Offer delineation and positioning |
| | Plan a business strategy | Identification of critical business processes |
| | | Preparation of strategic and operational plans |
| | | Handling risk and uncertainty |
| | | Periodic strategy update and adaptation |
| | | Impact assessment |
| | Design and implement an organizational structure | Developing organizational structures |
| | | Developing policies, systems and procedures for adequate governance |
| | Innovation and dynamization | Conducting basic and technical research |
| | | Capability dynamization |

*Source: Own work*

What resources and capabilities would be needed to implement the strategy would depend not only on the type of industry the firm operates in, but also on the positioning strategy selected. According to Porter (1980 and 1985) businesses obtain above average returns by pursuing one

[20] Given that the model focuses on single-business enterprises there is no mention to corporate strategy issues as part of the strategic competence of the business.

of four generic strategies. Unfortunately, Porter's approach does not allow us to fully understand and identify all the linkages between strategy and operations; therefore it is necessary to go a step deeper into the level of detail offered by Porter.

Looking into the offer differentiation aspects it is possible to identify six independent differentiation attributes: the time required to deliver the offer (time), the place of delivery (place); the quantity of units the firm is able to deliver (quantity); the total quality of the offer (quality); the generic, physical and extended attributes of the offer such as shape, colour, materials, functionality, etc. (attributes); and the cost of the offer (cost). The business could also differentiate and create competitive advantage by crafting a unique image or brand (brand name). This dimension is not independent as branding itself cannot generate long term competitive advantage on its own unless it is supported by any of the previous six independent positioning variables.

It is no longer possible to say that the firm is confined to four generic strategies as described by Porter. Any business faces 126 possible strategies[21] for each strategic scope, six simple strategies involving only one dimension, and 120 complex strategies combining more than one positioning dimension and exhibiting different levels of complexity.

***Table 20: Typology of business strategies***

| | | Strategic strength | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Simple independent strategies | | | | | | Brand name | Complex strategies | | | |
| | | Cost | Time | Place | Quantity | Quality | Attributes | | | | | |
| Strategic scope | Broad | | | | | | | | | | | |
| | Narrow | | | | | | | | | | | |

*Source: Own work*

The smaller the enterprise, the lower the chances it will be able to follow any strategy with a broad strategic scope, and the higher the chances it will not choose a strategy characterized by high levels of complexity.

[21] The number of strategies is given by the following sum of binomial coefficients:

$\{6 + [C\binom{7}{2} + C\binom{7}{3} + C\binom{7}{4} + C\binom{7}{5} + C\binom{7}{6} + 1]\}$.

The selected strategy will determine the characteristics of the business' production competence, and the required production capabilities to implement the strategy[22]. Five of the seven product positioning dimensions correspond to the five objectives of the production function. Furthermore, the positioning strategy will determine the necessary production capabilities, and through them it will impact the organizational structure as it will determine the shape of the production department whose objective is to ensure the offer meets the necessary requirements.

***Table 21: Production competence, capabilities and processes***

| Competence | Capabilities | Processes |
|---|---|---|
| Production competence | Meeting attribute requirements | New product design and prototyping |
| | | Product alteration and enhancement |
| | | Product discontinuation |
| | Meeting quality requirements | Development of quality standards |
| | | Development and implementation of quality control procedures |
| | | Design of after sales service departments |
| | Meeting quantity requirements | Production processes engineering |
| | | Tool identification and design |
| | | Planning and scheduling work |
| | | Dispatching work |
| | | Design layout and install production facilities |
| | Meeting cost requirements | Balancing production |
| | | Implementation of cost reduction programmes |
| | | Implementation of continuous improvement programmes |
| | | Developing maintenance systems |
| | | Estimating production costs |
| | | Location and site selection |
| | Meeting time requirements | Determining inventory and stored capacity requirements |
| | | Keeping stock |
| | | Purchasing and expediting |
| | | Internal logistics |
| | | Handling materials |
| | | Fulfilling freight operations |

*Source: Own work*

[22] Additionally, the selected positioning strategy will determine which of Porter's five forces, and which specific aspects of those forces, are more relevant for the functioning of the firm and the success of the business. The behaviour of the firm *vis-à-vis* its competitors (e.g. pricing, patents, use of signalling mechanisms, etc.), and the choices it makes to develop new and adapt existing capabilities, renew its resource base, etc., will not only have internal effects but also effects on the competitive environment.

The remaining two positioning dimensions (i.e. brand name and place) are embedded in the business marketing competence. As part of its marketing competence the business will need to reach and communicate with potential clients, close business deals that secure medium to long term profitability, and distribute its products. All these capabilities are operational in nature and differ from the identification of niche markets and the strategic positioning of the offer that is part of the strategic competence.

***Table 22: Marketing competence, capabilities and processes***

| Competence | Capabilities | Processes |
|---|---|---|
| Marketing competence | Communication | Developing a brand name |
| | | Advertisement and promotion |
| | | Preparing sales material |
| | Distribution | Selection of distribution channels/modes of entry |
| | Obtaining orders and securing sales contracts | Prompting and responding to sales inquiries |
| | | Pricing and quoting |
| | | Negotiating |

*Source: Own work*

To develop the aforementioned competences and capabilities the SME should have access to and manage six resources (i.e. 1. knowledge, 2. human resources, 3. financial assets, 4. physical assets, infrastructure and technology, 5. networks and relationships, and 6. non-physical assets). In order to be able to do this it should have resource management competence. The objective of the resource management function is to make an effective and efficient use of resources and to update and upgrade the business' resource endowment. Because resources overlap[23], the processes needed to develop resource management capabilities also overlap, and the same process could directly contribute to the simultaneous development of various resource management capabilities. Because of this overlapping table 23 only shows things that need to be done rather than the processes that need to be developed to do those things. One key capability is that of resource coordination and orchestration, which refers to the capacity to exploit benefits arising from the resources' complementarity and cospecialization.

[23] An employee is a human resource, but the reason for hiring could be her specific knowledge or her network of relationships. When the manager makes plans about the business' physical assets she is also making plans about the need of financial resources.

***Table 23: Resource management competence, capabilities and tasks***

| Competence | Capabilities | Tasks to be undertaken |
|---|---|---|
| Resource management competence | Knowledge management<br>Human resources management<br>Financial assets management<br>Physical assets, infrastructure and technology management<br>Networks and relationships management<br>Non-physical assets management<br>Resource coordination and orchestration | 1. Identification of resource needs;<br>2. Planning the use of resources;<br>3. Acquisition of resources;<br>4. Internal development of resources;<br>5. Allocation of resources;<br>6. Integration of different resources;<br>7. Internal upgrade of resources;<br>8. Monitoring the use of resources;<br>9. Disposal of unnecessary resources. |

*Source: Own work*

To conclude this section, and to complete the model, table 24 presents the business goal and the functional objectives that competences and capabilities are meant to achieve.

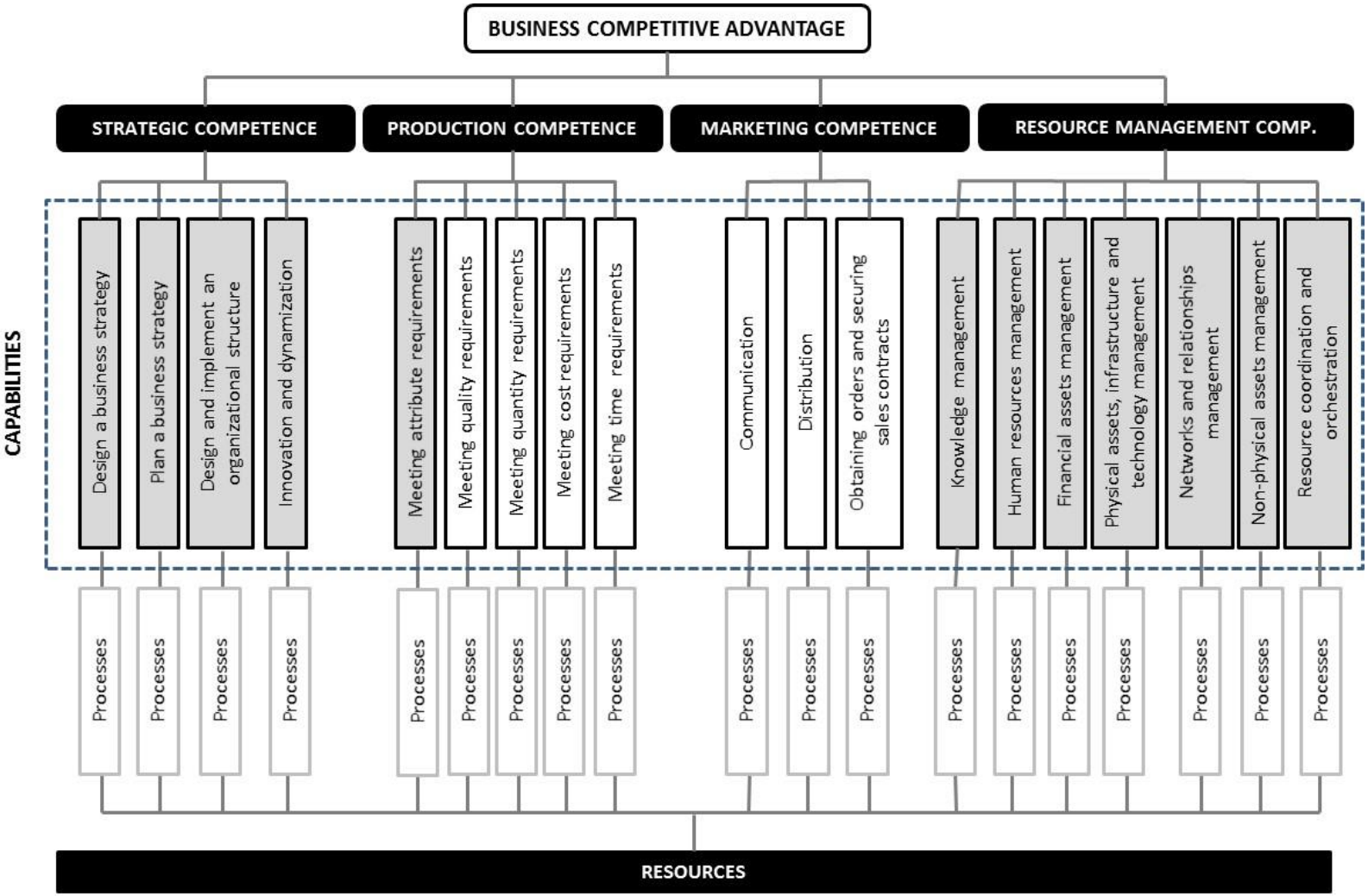
***Table 24: Business goal and functional objectives***

| Goal of the business | | | |
|---|---|---|---|
| To make money by achieving sustained competitive advantage | | | |
| **Objectives of the strategic function** | **Objectives of the production function** | **Objectives of the marketing function** | **Objectives of the resource mgmt. function** |
| • Provide direction to the business<br>• Ensure the business has an adequate structure<br>• Facilitate change | • Meeting attribute requirements<br>• Meeting quality requirements<br>• Meeting quantity requirements<br>• Meeting cost requirements<br>• Meeting time requirements | • Reach and communicate with clients<br>• Obtain orders and close sales contracts<br>• Distribution of the offer<br>• Obtain medium to long term profitability | • Make an effective and efficient use of resources<br>• Update and upgrade the endowment of resources |

*Source: Own work*

The figure below is a graphical representation of the model presented above. SMEs become competitive by developing four competences and nineteen capabilities. Which capabilities are critical would depend on the market the SME is targeting and the way it wants to reach its potential customers. Dynamic capabilities are coloured grey and operational capabilities white.

***Figure 9: The competences and capabilities of the business***




*Source: Own work*

## 5.3 The role of the knowledge management capability

The review of the literature undertaken in the first part of this dissertation highlighted the importance of knowledge management capability in the business quest for international competitiveness. Some authors have attempted to provide a meaningful and workable hierarchy of capabilities, but despite the efforts not much progress has been achieved (Collis, 1994; Winter, 2003; Helfat and Peteraf, 2003; Zahra *et al*., 2006). As Zahra *et al*. (2006) indicate: "*the literature on the distinction between dynamic and substantive capabilities is in its infancy*".

The model presented here allows for a hierarchical ordering of capabilities according to the capability's relevance for the achievement of competitive advantage and its degree of dependency. Competitiveness is attained through an adequate design of a business strategy that identifies a target market where the business could differentiate from its competitors by providing a unique offer to its customers at all times. This is accomplished thanks to the strategic competence. A common characteristic of all capabilities constituting the strategic competence is that they are intensive in the use of knowledge and information. In that sense, this model resembles the knowledge-based view to strategy by supporting the notion that businesses differ from each other because they are able to envisage different futures thanks to their capacity to generate and manage knowledge, and this way they can shape their environments rather than being shaped by them (Takeuchi, 2013).

Knowledge about clients' needs, competitors' offers, and the industry are key inputs for the identification of markets and the subsequent segmentation, targeting, and positioning processes needed to design a business strategy. Knowledge about internal production and marketing processes and their resource requirements is used for strategy verification and planning. Knowledge is the crucial element that shapes the strategy and the main determinant of its adequacy, as a strategy is as good as the knowledge available when designing and planning it. The relevance of knowledge goes beyond its utilization for strategic purposes, as it is also a key element in the operational implementation of the strategy. Knowledge management affects perceptions of uncertainty, assessments of risks, and therefore, the attractiveness of identified business opportunities. Information about production processes, waste reduction techniques, channels of distribution, etc., conditions the design of business' operations. Furthermore, knowledge is the quintessential factor in SME growth and internationalization theories.

A business' knowledge management capability only depends on the manager's acknowledgement of its importance and her ability to install the necessary processes to manage this resource. Because of its relative independence and its importance as an input to other capabilities, knowledge management represents the highest level of capability and is a third order dynamic capability. The importance of knowledge management in the development of other dynamic capabilities and the achievement of sustained competitive advantage is a notion that has been acknowledged by other researchers (Spender and Grant, 1996; Verona and Ravasi, 2003). This third level dynamic capability shapes the productive opportunity set and allow SMEs endowed with similar resources to generate different resource combinations and identify different profitable growth opportunities.

The ability to identify, acquire, allocate, transfer, and use knowledge would determine the output of the business' strategy design and planning efforts. Because of its dependency on information and knowledge, strategic capabilities are second order dynamic capabilities. These capabilities also encompass the firm's ability to create and/or modify existing first order dynamic capabilities (Collis, 1994; Zollo and Winter, 2002; Winter, 2003).

First order dynamic capabilities are those dynamic capabilities associated to the production and resource management competence, and aimed at meeting the attributes requirements of the offer (i.e. the SME's ability to design, modify, enhance, and test the business' products, as well as to discontinue its production) and making decisions about the firm's remaining resources.

Finally, the outputs and knowledge generated by all dynamic capabilities are used to determine the foundations of the firm's business by shaping the non-dynamic production and marketing capabilities (operational capabilities).

Following Teece's (2009), dynamic capabilities could be disaggregated into sensing, seizing and reconfiguring capabilities. It is interesting to acknowledge that dynamic capabilities could be multipurpose, and that the business' knowledge management capability is a clear example of this. The knowledge management capability plays an important role in identifying new business opportunities (sensing), in ensuring the business can profit from those opportunities (seizing), and in adapting and reconfiguring the business resource base following market changes (reconfiguring). This multiplicity, not matched by other capabilities, further highlights its importance and justifies its preeminent position in the hierarchy of business capabilities.

***Table 25: Hierarchy of capabilities***

| | |
|---|---|
| 3rd order dynamic capabilities | Knowledge management capability |
| 2nd order dynamic capabilities | Strategic capabilities |
| 1st order dynamic capabilities | Dynamic capabilities related to production competence and resource management capabilities (other than knowledge) |
| Operational capabilities | Non-dynamic production and marketing capabilities |

*Source. Own work*

In line with the findings of other researchers knowledge represents the foundation stone of enterprise competitiveness. Because dynamic capabilities are shaped by the co-evolution of the capability to manage knowledge (Zollo and Winter, 2002) this dynamic capability could be consider the most important of all[24]. The performance and evolution of all other capabilities, both dynamic and operational, is determined in a way or another by the existence of a well-functioning knowledge management capability.

## 5.4 Are different capabilities needed in international markets?

One of the key questions that prompted this research work is to determine whether unique capabilities were needed for SMEs to succeed in international markets, over and above those capabilities needed to conquer domestic markets. This section will address the issue from a theoretical point of view by summarizing the opinions of various researchers and critically assessing whether the differences between domestic and international business' operations require new capabilities, or the adaptation of existing ones.

### 5.4.1 Capabilities identified in the literature

Penrose believed that domestic and international firms were intrinsically the same and there was no need to build differential theoretical models to understand them. Contrary to Penrose's opinion, other authors believe that international businesses need unique competences and capabilities. The table below presents some of the dynamic capabilities identified by other

[24] It would probably be more accurate to refer to the business knowledge management capability as a *primus inter pares* as all dynamic capabilities are important and no one capability in isolation can ensure the achievement of the business goal and the functional objectives.

authors as drivers of business internationalization and maps those capabilities to the model presented above.

***Table 26: Dynamic capabilities driving business internationalization***

| Authors | Dynamic capabilities identified | Mapping of competences and capabilities |
|---|---|---|
| Vahlne and Johanson (2013) | **Opportunity development capability:** Ability to identify opportunities and to mobilize relevant resources both within the firm and from third parties. | Strategic competence – Capability to design a strategy<br>Resource management competence |
| | **Internationalization capability:** Ability to approach and develop different markets and locations under various circumstances. | Strategic competence – Capabilities to design and plan business strategies<br>Marketing competence |
| | **Networking capability:** Ability to build, sustain and coordinate relationships in a network. | Resource management competence – Capability to manage networks and relationships |
| Frasquet *et al*. (2013) | **Knowledge acquisition and learning capability**: Ability to identify, collect, and utilize market information and knowledge. | Resource management competence – Knowledge and information management capability |
| | **Adaptation capability**: Ability to adapt product and processes to respond to local markets and the local environment. | Production competence – Capabilities to meet physical, quantity (production processes engineering) and cost (implementation of improvement programmes) requirements |
| | **Entrepreneurship vision capability**: Ability to proactively sense and seize opportunities and to analytically develop routines to transform operations or relationships in the business model. | Strategic competence – Capabilities to design and plan business strategies |
| | **Brand building capability**: Ability to manage the transfer of the brand to multiple markets, to manage its adaptation without losing brand integrity, and to present a brand experience that integrates product, channel and systems tailored to the target market. | Marketing competence – Communication capability (developing a brand name) |
| | **Location and store design management capability**: Ability to establish physical sales outlets taking into consideration local customer culture, shopping environments, and property markets. | Marketing competence – Distribution capability |
| | **Channel management capability**: Ability to manage direct and indirect channels, in different combinations and different markets. | Marketing competence – Distribution capability |
| | **Customer relationship management capability**: Ability to sense, respond and be directly involved in changes in customers' preferences. | Marketing competence – Capabilities to communicate and to obtain orders and close contracts |
| Johansen and Knight (2010) | **International market orientation capability**: Ability to acquire, process, and use information to conceive exchange relationships with customers that satisfy their expectations. | Strategic competence – Capability to design a business strategy |
| | **International entrepreneurial orientation capability**: Ability to embrace risk-taking, innovativeness, and proactiveness in strategic decision making. | Strategic competence – Capabilities to design and verify business strategies and to innovate and dynamize the business |

*Source: Own work*

***Table 26: Dynamic capabilities driving business internationalization (Cont.)***

| Authors | Dynamic capabilities identified | Mapping of capabilities |
|---|---|---|
| Prange and Verdier (2011) | **Threshold capabilities**: Ability to meet the necessary requirements to compete in a given market. They do not create competitive advantage, allow the business to achieve parity with competitors. | Operational marketing and production capabilities |
| | **Consolidation capabilities**: Ability to achieve efficiency gains by consolidating existing routines and capabilities and by streamlining best practices throughout the organization. | Production competence - Capability to meet cost requirements (implementation of improvement programmes) |
| | **Value-adding capabilities**: Ability to create new capabilities as the firm internationalizes. | Strategic competence – Cap. to plan a business strategy |
| | **Disruption capabilities**: Ability to drive strategic change in order to prevent age-related liabilities and lock-in effects. | Strategic competence – Capability to innovate and dynamize the business |
| Knight and Kim (2009) | **International market orientation capability**: Ability to align international business activities toward customers and competitors, and to coordinate activities across functional areas in the firm. | Strategic competence – Capability to design and implement an organizational structure |
| | **International marketing skills capability**: The scope of this capability is very broad as it includes product adaptation, advertising, direct sales, promotional techniques, handling of products in foreign markets, brand building, segmentation and targeting, pricing, planning, controlling and evaluating how marketing tools are organized to differentiate from competitors, create demand, etc. | Strategic competence – Cap. to design business strategies<br>Marketing competence<br>Production competence – Cap. to meet physical characteristics requirements |
| | **International innovativeness capability**: Ability to develop and introduce new processes, products, services and ideas to international markets resulting from internal R&D. | Strategic competence – Capability to innovate and dynamize the business |
| | **International orientation capability**: Ability to conceive an aggressive, entrepreneurial approach to international markets and to actively explore new business opportunities abroad. | Strategic competence – Capability to design business strategies |
| Weerawardena *et al*. (2007) | **Market-focused learning capability**: Ability to acquire, disseminate, unlearn and integrate market information into actionable knowledge. | Resource management competence- Knowledge management capability |
| | **Internally-focused learning capability**: Ability to acquire, disseminate and integrate technological and non-technological information and knowledge generated within the firm. | Resource management competence – Knowledge management capability |
| | **Networking capability**: Ability to create, maintain, and nurture relevant, superior and effective networks that are conducive to opportunity identification and knowledge gathering. | Resource management competence - Capability to manage networks and relationships |
| | **Marketing capability**: Ability to formulate effective marketing mix strategies that are critical to identify and access international opportunities. | Strategic competence – Cap. to design a business strategy<br>Marketing competence – Cap. to obtain orders and close contracts |

*Source: Own work*

A relative consensus seems to arise on the fact that the identification, gathering, and processing of knowledge and information from the market, and its utilization to identify and seize business opportunities are key dynamic capabilities. This resonates well with the hierarchy of capabilities presented above and provides an indication of its adequacy. Beyond this consensus, current business literature still leaves us with some important unanswered questions: Are the identified capabilities unique to international markets?; Do they cover the entire spectrum of capabilities needed for internationalization?; if those capabilities are also found in firms targeting domestic markets, how do they differ in the context of a business that operates internationally?

### 5.4.2 Which capabilities should be developed?

If SMEs are to develop new competences and capabilities, they will do it to overcome the barriers they face when attempting to enter and gain a position in international markets (Bilkey, 1978; Ramaswami and Yang, 1990; Leonidou 1995a, 1995b, 2004; Hamill, 1997; Westhead *et al*., 2004). Table 27 provides a summary of the barriers to internationalization.

***Strategic competence***

Looking at the barriers related to the business' strategic competence, it's clear that SMEs struggle with the capabilities to design a business strategy. These capabilities encompass the ability to identify a market, segment the market, select a market niche, position the offer, and validate all assumptions made during the design of the strategy. Domestic and international SMEs alike need these capabilities to succeed. If the SME is unable to design an international strategy while simultaneously succeeding with its domestic strategies, it is likely that the problem resides not on its inability to design a strategy, but rather in the information and knowledge available for strategy design and planning. Information asymmetries and lack of sufficient knowledge make the design and planning of international strategies considerably more difficult than domestic strategies.

This reasoning also applies to the remaining capabilities that constitute the strategic competence. The added complexity of this competence is not related to its constituent capabilities and processes, which do not change, but rather with the information and knowledge used to develop them.

***Table 27: Barriers to internationalization***

| Related area | | Barriers to internationalization |
|---|---|---|
| Strategy | Design a business strategy | - Problems identifying and selecting foreign markets.<br>- Keen competition in foreign market.<br>- Different foreign customer habits/attitudes. |
| Production | Quantity | - Insufficient production capacity.<br>- Unable to create new routines and processes |
| | Quality | - Different product standards/specifications abroad.<br>- Inability to offer technical/after-sales service. |
| | Cost | - High shipping costs. |
| | Time | - Difficult handling of documentation/procedures.<br>- Problematic transport |
| | Attributes | - Product design not suitable for foreign markets.<br>- Need for costly product adaptation. |
| Marketing | Distribution | - Lack of or inadequate foreign distribution channels and/or overseas representation. |
| | Obt. orders and sec. sales cont. | - Problems contacting potential clients.<br>- Inability to offer competitive prices abroad. |
| Resource management | | - Limited or lack of knowledge of foreign markets.<br>- Limited resources for country screening and market research.<br>- Lack of internationally experienced personnel.<br>- Lack of formal education/training in export.<br>- Shortage of working capital to finance exporters.<br>- Difficult/slow collection of payments from abroad.<br>- Existence of language/communication problems.<br>- Difficult to understand foreign business practices and culture.<br>- Unfavourable/fluctuating foreign exchange.<br>- Inability to create and/or join networks and political influence.<br>- Lack of non-physical assets (e.g. reputation and credibility). |
| Behavioural / Psychological | | - Short-term perspective.<br>- Lack of commitment to exporting.<br>- Exporting seen as *not for us*, *too much trouble*, or *too risky*.<br>- Fear or exporting. |
| External | | - Lack of governmental assistance/incentives.<br>- Imposition of high tariff/non-tariff barriers.<br>- Restrictions imposed by foreign rules/regulations. |

*Source. Own work based on Leonidou (1995a and 2004) and Hamill (1997)*

***Production competence***

As explained by the model, the positioning dimensions determine the production capabilities the SME would need to develop. Those dimensions do not change when entering international markets; therefore production capabilities should not change either.

Production related barriers may increase the complexity of at least four production capabilities. Some barriers relate to the SME's ability to meet requirements *vis-à-vis* the attributes of the offer, particularly the inability of the firm to translate ever changing foreign client's needs and wants, as well as product related regulations into tangible specifications. Some barriers relate to the capability to meet the quantity requirements, which relates to the investments the business has made in production capacity, and the effectiveness and efficiency of its production processes. Other barriers relate to the inability to meet quality requirements due to inadequate quality control procedures or the lack of after sale service. Of the two, the latter presents the highest level of complexity for SMEs selling industrial goods and consumer durables. Reviewing the four aforementioned capabilities it is clear that there is nothing inherent to internationalization that would indicate the need to drastically change the morphology of those capabilities, shall those capabilities already exist in the business and be well-functioning.

The capability that it is most likely to receive the highest impact is that of meeting time of delivery requirements, and particularly the process of fulfilling freight operations. The table below summarizes the nature of the added complexities for this capability resulting from the internationalization strategy.

***Table 28: Production capabilities in international firms***

| Capability | Process | Nature of the complexity |
|---|---|---|
| Meeting time requirements | Fulfilling freight operations | When the manager is dealing with an international transaction the issues to consider with special attention are:<br>- Determining if the business needs an **export licence**;<br>- The selection of the **modes of transport** (i.e. sea cargo, air cargo, train cargo, road cargo, intermodal freight cargo) and the **selection of the carrier** (i.e. freight forwarder);<br>- The correct **packing**, **marking** and **labelling** of the product for export;<br>- The **insurance** of the cargo;<br>- The **customs clearance** of exports (certificates of origin, certificate of value, other required documentation). |

*Source. Own work*

The analysis of production related barriers gives no indication that SMEs would need to develop additional production capabilities to succeed in international markets over and above what they should develop to succeed in domestic markets. Yet again, the complexity of the processes underlying each capability will certainly change.

***Marketing competence***

The marketing competence ensures the business is able to communicate with customers, engage in profitable transactions, and distribute its offer. All marketing capabilities will be affected by entering foreign markets, but there is nothing inherent to international markets that would make the already identified capabilities irrelevant or would require the development of new capabilities. Differences in languages, currencies, and legal systems add complexity to international transactions, but they often relate to information asymmetries, risk aversion and lack of knowledge, rather than with the need to develop new capabilities.

Marketing related barriers would mostly impact two capabilities: the distribution capability, and the capability to obtain orders and secure sales contracts. Table 29 summarizes the nature of the added complexity resulting from operating abroad.

***Table 29: Marketing capabilities in international firms***

| Capability | Process | Nature of the complexity |
|---|---|---|
| Distribution | Selection of distribution channels/modes of entry | This capability basically has to do with the identification, selection and management of the most adequate channel of distribution. For exporters there are two alternative entry modes: **direct export** and **indirect export**. The decision between the two involves determining the level of vertical control desired by the manager, the cost of actually performing the necessary operations, and the transactions costs that arise in the organization of an activity or of contracting with other parties.<br>- **Indirect exports** is the process of exporting through independent export intermediaries based in the home country (i.e. export merchants, export management companies, confirming houses, nonconforming purchasing agents). The manager has no control over its products in the foreign market.<br>- **Direct exporting** occurs when a manufacturer or exporter sells directly to an importer or buyer located in a foreign country. In general direct exporting is done through four types of arrangements: sales agents, overseas sales subsidiaries, overseas sales branch, and importing distributors. |
| Obtaining orders and securing sales contracts | Prompting and responding to sales inquiries | There are different ways of initiating contact with potential foreign customers. Two of the most popular are:<br>- **Trade fares** and **exhibition**s are one of the oldest forms of export promotion activities organized (mostly) by governments or private sector associations, and the most important in terms of the amounts of money spent.<br>- **Inward and outward trade missions**; |
| | Pricing and quoting | It is important that the exporter correctly identifies **the price structure**, which is an internal calculation giving a detailed picture of all cost increments from factory cost to the end customer price. Price structures will change depending on the INCOTERM selected for the operation.<br>One important item in the price setting process is the proper identification of the **import duties and taxes** that will be levied on the products. Upon arrival to destination goods will be valued by custom authorities as this value will constitute the taxable basis for customs duties. Today, almost all customs administrations value imported goods in terms of one of the six valuation methods stated in the 1994 WTO Agreement on Customs Valuation. Currently more than 90% of world trade is valued on the basis of the transaction value methods provided by the agreement.<br>In most international transactions the buyer will be responsible for importing the products to its own country, clearing customs and paying any applicable custom duties. However, if the seller agrees to sell landed, duty paid, or delivered to the buyer's place of business (usually called free domicile or free house delivery) the seller will be responsible for such duties.<br>Another important aspect of price setting is the decision of which **currency** to specify in the sales contract. |
| | Negotiating | When the manager is dealing with export transactions there are very important things that would need to be negotiated with the customer that differ from domestic transactions, and add complexity to export transactions.<br>- The **conditions of sale** that will apply to the transaction (i.e. contractual issues and pre-shipment inspections);<br>- The **INCOTERMS** to be used;<br>- The **terms of payment**; and<br>- Issues related to **intellectual property** (i.e. trademarks, patents, copyrights, trade secrets, geographical indicators). |

*Source. Own work*

***Resource management competence***

Internationalization has no repercussion in the number of capabilities needed to develop the resource management competence. The reason being that the number and nature of resources do not change, and the business still has to undertake the nine tasks identified in table 23 for every resource.

Resource endowments and the management of those resources are key determinants of the success of an internationalization strategy, but not all resources have the same importance. Financial assets available, knowledge and information about foreign markets, and human resources with the right combination of knowledge and experience in export transactions, have preponderance over other resources when it comes to internationalization. Shortage or mismanagement of those resources is a major barrier to enterprises willing to export. The processes underlying the development of resource management capabilities will certainly be more complex and difficult to operate, but the nature of the processes and capabilities will remain unchanged. Table 30 shows the added complexities in the management of these resources.

***Table 30: Resource management capabilities in international firms***

| Capability | Process | Nature of the complexity |
|---|---|---|
| Knowledge management | Processes related with the acquisition and processing of information | - Statistical information about trade flows is usually available. It is much more difficult to obtain meaningful information about customers' preferences and habits.<br>- Information tends to be less accurate;<br>- Direct contact with potential customers is difficult and third parties (e.g. agents, intermediaries, chambers of commerce, trade promotion organizations, etc.) are needed;<br>- The acquisition of information could be potentially expensive;<br>- Language and cultural barriers may pose challenges when processing the information acquired. |
| Financial assets management | Getting paid | For domestic sales, if the buyer has good credit, sales are usually made on open account; if not, cash in advance is required. For export sales, the business will need to learn to use other, more complex, methods of payment such as:<br>- Documentary Collection - aka Draft or Bill of Exchange (Docs. against payment or Docs. against acceptance)<br>- Letter of credit (revocable or irrevocable, confirmed or not confirmed)<br>- Factoring<br>- Forfaiting |
| Human resources management | Identify staff with the right competences and skills | One of the added difficulties in managing human resources for international firms is to be able to identify and attract personnel with the required competences and skills.<br>Export personnel should:<br>- Have adequate language skills.<br>- Have experience in conducting international transactions, and knowledge of the processes.<br>- Have experience in dealing with different cultures and business practices.<br>- Be willing to travel. |
| | Training personnel | In order to achieve, sustain and improve competitiveness in international markets managers would need to have programs in place to maintain, upgrade and update skills and know-how of employees about the firm's international operations. |

*Source. Own work*

### 5.4.3 Preliminary conclusions

Building on Penrose's notion that domestic and international operations do not require different theoretical constructions, this model suggests that SMEs need to change the morphology of their capabilities but not necessarily develop new ones to succeed in international markets. Changing the capabilities' morphology requires the adaptation of processes and resource

requirements to ensure they remain operational despite the increased complexity, dynamicity, and uncertainty prevailing in international markets. Morphological changes may go beyond the complexity of the technical content of each process. As Eisenhardt and Martin (2000) suggest, in moderately dynamic markets capabilities resemble the traditional conception of routines (i.e. they are detailed, analytic, stable processes with predictable outcomes), while in high-velocity markets they are simple, highly experiential and fragile processes with unpredictable outcomes.

Higher market dynamism may affect the relative importance of capabilities, particularly of dynamic capabilities. Geroski (2005) suggests that while capabilities are durable, their relevance is not, and they only generate value in specific market settings. When market conditions change the capabilities that were the pillars of firm growth in the past may prove to be irrelevant in the new context. Due to the higher dynamicity of international markets, it is possible that capabilities that were not critical in domestic markets become critical in international markets. This does not imply that these capabilities are indeed new or unique to international markets; it just reflects a shift in importance due to a change in market conditions. The relevance of dynamic capabilities increases in international markets as the need for adaptation and change is greater.

## 5.5 Closing remarks

This model presented in this chapter provides a robust and complete description of the enterprise that encompasses knowledge driven entrepreneurism and the development of competences and capabilities with various implications for internationalizing firms. While filling a gap in the literature, it contributes to the discussion on the sources of SMEs' competitive advantage in international markets and opens the discussion of whether new capabilities are needed for successful internationalization.

The model brings together strategic and operational management and shows how the two are linked. It also shows how a portfolio of processes is strategically designed and implemented in order to develop the necessary capabilities determined by the business strategy through the positioning of its offer. The model also provides a logical argument for a hierarchy of capabilities with three levels of dynamic capabilities, which also contributes to the understanding and identification of sustained competitive advantage. Operational capabilities could very well be the sources of temporary competitiveness as an effective and efficient design and implementation of those capabilities will ensure operational excellence. Sustained enterprise competitiveness can only be achieved by an adequate design and development of dynamic

capabilities, as they are the ones that ensure the business is able to adapt itself to market changes. Operational excellence coupled with an ability to successfully cope with expected and unexpected market disturbances result in long term competitiveness.

Using the model to analyse the findings of the literature review, it is possible to provide a theoretical answer to a number of important issues such as: 1. the lack of understanding of which specific capabilities enable SMEs to be internationally active (Zahra *et al*., 2000; Ethiraj *et al*., 2005; Gassmann and Keupp, 2007), and 2. whether domestic and international firms can be understood using the same theoretical model (Penrose, 1987; Teece, 2009). Furthermore, the model goes a step further and for the first time it makes an exhaustive list of business competences and capabilities, as well as it addresses the concerns of Galunic and Eisenhardt (2001) by suggesting a list of processes that constitute each capability.

***Is it possible to make an exhaustive list of the capabilities a business needs to develop?***

Yes it is possible. All businesses, independently of the sector in which they are active, need to develop four competences and nineteen capabilities. These capabilities are supported by generic business processes which take different shapes as per the needs of each enterprise. The model makes an initial suggestion of those processes for each capability.

***Are different capabilities needed for international markets?***

No, enterprises do not need to develop unique capabilities to succeed in international markets, although they may need to change the morphology of the underlying processes to account for the larger complexity, volatility, and uncertainty of international markets. The degree of complexity, flexibility, and formality of the processes will depend on the characteristics of the enterprise and of the target market.

***What are the drivers of international competitiveness?***

As per the definition of enterprise competitiveness provided in chapter one, the model suggests that the drivers of international competitiveness are the same as the drivers of domestic competitiveness. It would be incorrect to distinguish between drivers of domestic and international competitiveness as they are one and the same. The drivers of competitiveness can be easily identified by looking at the hierarchy of capabilities proposed by the model.

First and foremost, competitiveness depends on an effective and efficient development of the business knowledge management capability as it provides the key inputs for the design of a

business strategy and for all the innovation efforts of the business. The knowledge management capability constraints the identification of business opportunities, and the ability of the business to shape a strategy to seize those opportunities. The business strategic competence provides not only direction to the firm, but also a blueprint for the development of the business capabilities. These dynamic capabilities provide the *sine-qua-non* elements for sustained competitiveness in domestic and international markets, but their existence does not guaranty competitiveness, as the shape of the processes that constitute these capabilities will certainly influence their effectiveness and efficiency.

The model has provided theoretical answers to a number of issues that have been discussed in the management literature for some time without reaching an agreement among the academic community. The next logical step is to see how well the model fits empirical evidence, and how good it is to assist in the analysis of SMEs' international competitiveness. This will be done in the empirical part of this work.

# CHAPTER 6: RESEARCH PROTOCOL

## 6.1 Research purpose

This research work is framed within the quest for understanding what makes a business competitive in international markets. Guided by the theoretical model presented in chapter fiver, this work focuses on certain specific objectives:

A. Validate the main conceptual propositions of the proposed theoretical model to analyse business competitiveness. This requires the validation of the number and nature of competences and capabilities, as well as the proposed hierarchy of capabilities.
B. Understand the relationship between higher order dynamic capabilities and other capabilities (dynamic and operational).
C. Understand the mechanisms (i.e. processes and their morphology) through which the business achieves a competitive position in the different local and international markets is active on. This includes the determination of whether specific and unique capabilities and processes are needed to succeed in international markets.
D. Determine the effect of higher level dynamic capabilities on business competitiveness and performance in international markets.
E. Identify common or similar patterns (behavioural and structural) in the development and functioning of knowledge management capabilities in successful international businesses.

This work aims at achieving these objectives by answering the three research questions presented in chapter five.

## 6.2 Case study methodology

The methodology that will be used in this work is the case study methodology. As several authors point out (Stake, 1994; Mertens, 1998; Yin, 2013), it is the nature of the research question and the choice of the object to be studied that lead a researcher to choose a qualitative method. Case studies seem to be the preferred method when the item under study is a single social phenomena or a single unit of analysis, such as an organization (Singleton *et al*., 1993) and for contemporary events where the relevant behaviours cannot be reasonably manipulated for scientific research (Yin, 2013). Case studies seem to be well suited where new or poorly understood processes or behaviours occur (Meyer, 2001), and when "*research and theory are at their early stages*" (Benbasat *et al*., 1987).

Despite challenges that have been well acknowledged by researchers (i.e. a solid methodological design is needed in order to ensure rigour, it is time consuming, it requires skilled interviewers, generalization of conclusions is not always possible, etc.), the contribution of case study research to theory-building is gaining wide recognition (Yin, 2013). If designed and applied with scientific rigour, this methodology is suitable for analysing and solving practical business problems, as well as for building and testing new business theories[25]. The case study methodology is qualitative in nature and it offers the opportunity to increase our understanding of business strategic decisions and the development of dynamic capabilities within the business (Helfat *et al*., 2007).

This research work will take the form of a contemporary, multiple and embedded case study based on a pre-established theoretical model that encompasses three distinctive and interrelated research areas. This methodology is characterized by the in-depth study of each participating enterprise, and is based on the methodological framework proposed by Villarreal (2007) and Villarreal and Landeta (2010).

The reason for choosing a multiple case study is because it offers the potential for generalization of findings as a result of increases in the scope of the investigation and the degrees of freedom (Miles and Huberman, 1984; Bonoma, 1985; Eisenhardt, 1989; Patton, 1990; Parkhe, 1993). Additionally, the triangulation of evidence permits a more rigorous and complete approach which increases the validity of the research by providing differing research sites and data sources (Denzin, 1978; Herriott and Firestone, 1983; Deshpande, 1983; Bonoma, 1985; Eisenhardt, 1989; Dul and Hak, 2008; Neuman, 1994; Stake, 1994; Yin 2013). An additional advantage of multiple case studies is that they allow literal and theoretical replication for theory confirmation (Yin, 1993, 1994, 1998, and 2013; Bonoma, 1985; Anderson, 1986; Tsoukas, 1989; Parkhe, 1993).

## 6.3 Ethical commitment

The following are the ethical commitments that the researcher leading this case study as well as all those participating in its development assume *vis-à-vis* the individuals and the enterprises focus of this study:

- Provide clear, accurate and complete information about the objectives of this study, and the way the study will be undertaken;
- Respect and appreciation of the time individuals devoted to meet the researcher;

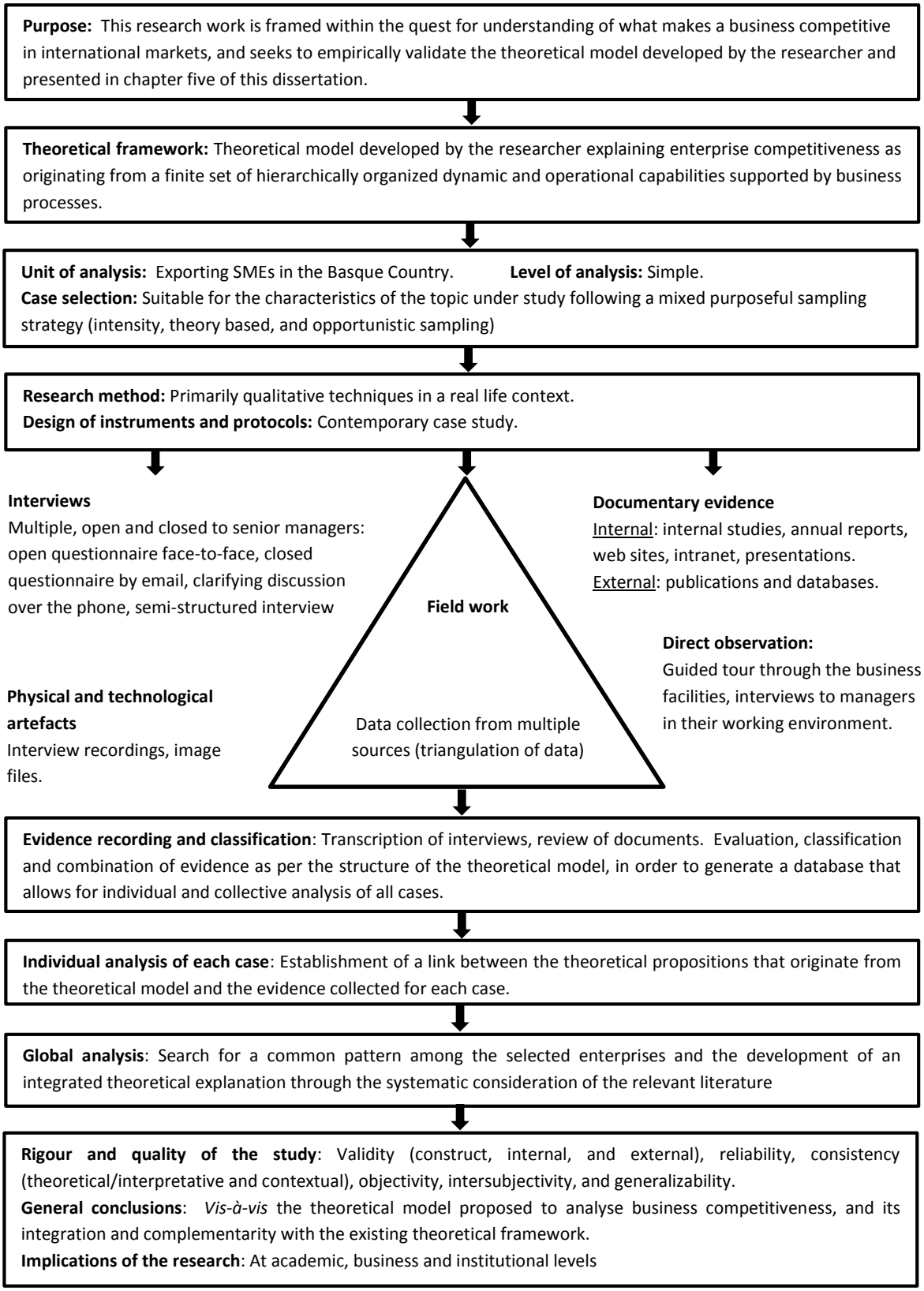
[25] For a thorough methodological discussion on the merits of case study research applied to business research please refer to Villarreal (2007).

- Recording of the interviews with the only objective of being able to transcribe the information received and avoid information loss and/or misunderstandings;
- The enterprises would be given a copy of the conclusions of the research in their businesses and would be able to comment and make clarifications before the work is submitted;
- The conclusions of the research will be used only for academic, teaching and research purposes;
- Highest level of quality and rigour.

## 6.4 Methodological design of the cases study

Following Villarreal (2007) and Villarreal and Landeta (2010) the following figure and tables present the methodological design (Figure 10) and the technical sheet of this case study (tables 31 and 32). Together they should provide the reader a complete and accurate understanding of what this research intends to achieve and how the work is going to be conducted.

***Figure 10: Methodological design***




*Source: Own work*

*Table 31: Technical sheet*

| | |
|---|---|
| **Research purpose** | **The phenomenon under investigation is the effect the firm's knowledge management capability on internationalization success.** The study will seek to:<br>A. **Empirically validate** the main conceptual propositions of the proposed theoretical model of business competitiveness. This requires a validation of the number and nature of competences and capabilities, as well as the proposed hierarchy of capabilities.<br>B. **Understand** the relationship between higher order dynamic capabilities and other capabilities (dynamic and operational).<br>C. **Understand** the mechanisms (i.e. processes and their morphology) through which the business achieves a competitive position in the different local and international markets is active on. This includes the determination of whether specific and unique capabilities and processes are needed to succeed in international markets.<br>D. **Understand** how the nature (i.e. administrative processes dealing with an intangible asset residing in in most of the cases in the minds of employees; processes overlap as a natural consequence of the fact that resources overlap, etc.) and morphology (i.e. technical complexity, level of formalization, and links with other processes) of the processes that support the knowledge management capability have an impact on the success of the business internationalization efforts.<br>E. **Identify** common or similar patterns (behavioural and structural) in the development and functioning of knowledge management capabilities in successful international businesses. By behavioural commonalities we refer to top and middle managers' approach to knowledge management and the actual use they make of existing and newly developed knowledge. By structural commonalities we refer to similarity in the organizational structure *vis-à-vis* knowledge management, and similarity in the morphology of the processes and the importance given to the different processes that support the knowledge management capability – e.g. giving more emphasis to knowledge transfer than to knowledge acquisition or to knowledge protection. |
| **Research methodology** | **Contemporary, multiple, and embedded case study – (type 4 study).**<br>It is **contemporary** because the objective is to study a current, real life phenomenon.<br>It is **multiple** because this research project will identify, select and study more than one case to study the phenomena.<br>It is **embedded** because it will have two units of analysis as it will analyse separately the effect of knowledge management on: a) The business' strategic competence, particularly on the design of the internationalization strategy (First unit of analysis: unit and/or department involved in strategy design and planning), and b) The business production and marketing competences, particularly on the improvement, change, and/or discontinuation of business marketing, production, and export transaction operations (Second unit of analysis: units in charge of marketing and production operations). |

| | |
|---|---|
| | The study will be **descriptive** as it seeks to describe how different business competences that are critical for the international competitiveness of a business are affected by the way knowledge management capability is structured within the business (i.e. the morphology and functioning of the supporting processes).<br><br>The study will be **exploratory** as it seeks to clarify, define, and discover aspects relative to the firm's dynamic capabilities that have not yet been studied such as the proposed hierarchy, the link between third level dynamic capability and path-dependency in internationalization, the link between third and second level dynamic capabilities, and between third level dynamic capability and business operations.<br><br>The study will be **explanatory** as it focuses on cause and effect relationships by seeking to explain why some enterprises are successful in their growth and internationalization endeavours. This work aims at identifying critical processes and capabilities for such challenge. Furthermore, the work seeks to test the theoretical model presented in chapter five. |
| **Unit of analysis** | **Multiple units of analysis:**<br><br>- The first unit of analysis consist of the department, unit and/or group of individuals in charge of strategy design and planning within selected small and medium sized enterprises of the Basque Country.<br>- The second unit of analysis will consist of the marketing and production departments of selected small and medium sized enterprises of the Basque Country. |
| **Geographic scope** | Basque Country |
| **Universe** | Exporting small and medium sized enterprises (SME - i.e. enterprises of less than 250 employees, a maximum annual turnover of € 50 million or a maximum annual balance sheet total of € 43 million) of the Basque Country. |
| **Sample type** | **Non-random**, **purposeful**, **logic** and **theoretical**.<br><br>- Selected SMEs would have to belong to the machine tool sector. The machine tool sector in the Basque Country is an ideal sector for this type of research work for the following reasons:<br>  • It is mostly composed of SMEs of various sizes;<br>  • It exports a large proportion of its production;<br>  • It is a dynamic market where positioning is done on the basis of tailored products with high content of R&D;<br>  • The offer taken to the market is a complex offer that includes the physical product that is manufactured and a wide spectrum of services designed to satisfy clients' needs. In that sense, the sector cannot be considered as a typical manufacturing sector as its offer is composed by services as well as a physical product.<br>- Selected SMEs should all be regular exporters (i.e. not opportunistic) and ideally have different export development levels. |

| | |
|---|---|
| | - Selected SMEs should assign an important role in their business to innovation and the management of knowledge.<br>- Even though enterprises would belong to the same sector, contextual variability in the study would be given by the different development paths the enterprise have followed in their life span. This would have an effect on the offer the enterprise take to the market (e.g. to the service content of their offer) and on the capabilities they develop over time.<br>- Selected enterprises should be independent in the sense that they should not be part of a larger conglomerate or subsidiaries of another foreign or domestic company. This is necessary because we are interested in indigenous capability development not the one resulting from a transfer from a parent company.<br>- Ideally, selected enterprises will serve the same market of client type.<br>- Ideally, the offer that the selected SMEs take to the market will include a service component. |
| **Sample** | - Given that the objective of the research work is to build theory based on the case studies, an ideal simple size would be between two to six enterprises. |
| **Data collection methods** | - Documentary review: letters, annual plans, progress reports, annual reports, internal policies, procedures manuals, etc.<br>- Interviews: open, closed and semi structured; on-site through telephone, Skype, and/or e-mail.<br>- Direct observation (Due to the nature of the research this method may not add much value).<br>- Utilization of physical, technological and cultural artefacts (Due to the nature of the research this method may not add much value). |
| **Information sources** | **Internal**: Archives, internal documents, web page, interviews, questionnaires.<br>**External**: specialized publications, databases, independent reports prepared by sectorial and/or governmental bodies, and media.<br>Given the size of the enterprises it is expected that internal sources would be predominant. |
| **Key informants** | **Criteria for sampling informants:**<br>1. **If possible draw informants from population representing multiple perspectives;**<br>2. **If possible use multiple informants for each perspective** so the validity of information provided by one informant can be checked against that provided by other informants.<br>3. **Key informants are expected to be knowledgeable about the topic in question** (i.e. business strategy design, marketing and production operations, export management and knowledge management processes)**;** |

| | |
|---|---|
| | **4. If possible include managers and employees whose work is affected by the knowledge management capability but who are not necessarily involved in the processes that support this capability.**<br><br>**Informants should be selected among the following groups:**<br><br>**Top and middle managers** directly involved in the design and implementation of the business internationalization strategy.<br><br>**Middle managers** in charge of managing: 1. export operations; 2. Production; 3. Marketing; 4. information and know-how; 5. Human resources, and 6. Networks and relationships.<br><br>**Employees** in charge of performing marketing and production operations. |
| **Methods for the analysis of the evidence** | Qualitative:<br><br>- Identification, classification and description of knowledge management processes, as well as capabilities and processes necessary for internationalization.<br>- Description of the evolution of the business' export strategy, export related operations, and export performance.<br>- Search of key explanatory factors (theoretical propositions).<br>- Search of a common behavioural pattern (theoretical propositions).<br>- Development of a theoretical explanation (systematic theoretical comparison).<br>- Identification of causal relationships (if possible).<br>- Critical decision analysis. |
| **Scientific approach** | **Deductive reasoning**: The starting point of this research is a set of theoretical propositions based on a review of relevant theoretical and empirical literature.<br><br>**Analytic induction**: Systematic examination of similarities between cases in order to develop concepts or ideas (replication logic).<br><br>**Analytic generalization**: Comparison of empirical findings with previously developed theory (Here theory means the set of theoretical propositions arising from the axiomatic model developed to understand business competitiveness). |
| **Methodological rigour and quality assessment** | Please refer to table 32 below |
| **Date** | September to December 2014 |

*Source: Own work*

***Table 32: Methodological rigour and quality assessment***

| TEST | TACTIC | RESEARCH PHASE |
|---|---|---|
| **Construct validity** | Refers to whether there is substantial evidence that the theoretical paradigm matches empirical observations. The issue here is the identification of correct operational measures for the concepts being studied, and the legitimacy of the application of a given concept to established facts.<br><br>Construct validity can be strengthened by:<br><br>1. Applying a *longitudinal approach* to test the sensitivity of the construct to the passage of time. Due to time limitations this may not be feasible in this research project, but an attempt will be made to trace back all the export decisions and identify the environment in which those decisions were made and the factors that influenced those decisions;<br>2. The use of *multiple cases* to validate stability of construct across situations;<br>3. The use of multiple methods to gather information to allow *methodological triangulation*;<br>4. The analysis of the context and the theoretical framework to allow *theoretical triangulation*;<br>5. The *use of feedback loops* (i.e. returning to interviewees with interpretations and developing theory and actively seeking contradictions in data);<br>6. The establishment of a *chain of evidence* (e.g. by developing a database). | |
| **Internal validity** | It refers to the validity of the postulated relationships among the concepts, and the presentation of the results in terms of the theory that originated the research propositions. Internal validity results from strategies that eliminate ambiguity and contradiction in interviewees' responses, finding patters of common behaviour that match the theory, explanation building, filling in detail and establishing strong connections in data. | Individual and global analysis of the cases. |
| **External validity** | It refers to the problem of whether empirical findings are generalizable beyond the immediate case study, and the definition of the domain to which the study's findings can be generalized. The analysis of multiple cases and rival theories helps ensuring external validity.<br><br>One way to increase external validity is to apply a *multiple case approach*, where the results from one case are used as reference to compare the results of the other cases. The advantage of this approach is that one can use the replication logic (literal and theoretical replication) to further strengthen the conclusions of the study. | |

| | | |
|---|---|---|
| **Reliability** | Reliability focuses on whether the process of the study - such as data collection procedures - is consistent and reasonably stable over time and across researchers and methods. The objective here is to minimize the errors and biases in a study that could influence the results. (Could the same study be carried out by two researchers produce the same findings? Could a study be prepared using the same researcher and respondents to yield the same findings?). Even though it is almost impossible to ensure that other researchers will arrive to the same conclusions, the researcher will put in place mechanisms to ensure the line of reasoning can be understood and followed.<br><br>To favour reliability the general methods and procedures used in the research project will be described in detail, a process of analysis will be outlined, conclusions will be explicitly linked with exhibits of displayed data, databases will be developed and the data from the study will be made available to other researchers. | General design and data collection. |
| **Theoretical and interpretative consistency** | Prior understanding of the different perspectives related to the phenomenon under study and the context surrounding the business and the key informants (high empathy).<br><br>Use of techniques (research protocol, open questions, semi-structured interviews) that allow key informants express themselves adequately.<br><br>Systematic comparison between the theoretical propositions in the model and the evidence obtained. Use of theoretical filters to assess the evidence obtained. | |
| **Contextual consistency** | The key issue here is to reach a clear understanding of the relationship between the empirical data with its context in which it was gathered to strengthen the explanatory power of the evidence. Attention should be given to the generic environment (i.e. international SMEs with headquarters in the Basque Country) as well as the specific environments of each case before reaching any conclusion. | |
| **Objectivity** | Refers to the relative neutrality and reasonable freedom from unacknowledged research biases. The researcher will make a conscious effort to set aside its own bias from the core of the analysis. Rival conclusions will be examined. A framework for the processing of data will be developed hoping it will help avoid biases. | |

*Source: Own work*

## 6.5 Components of the case study

Yin (2013) identifies five components of a case study research design that should not be overlooked by the researcher:

1) The case study's questions;
2) Its propositions;
3) Its unit(s) of analysis;
4) The logic linking the data to the propositions; and
5) The criteria for interpreting findings.

Research questions have been presented in chapter 4. The theoretical model developed in chapter five provides the theoretical framework to interpret the findings. This model explains business competitiveness as originated from a hierarchically grouped set of dynamic and operational capabilities, and generates a number of propositions that are linked to each of the three research questions discussed in chapter four. These propositions will be presented in the next section and will guide the research and facilitate the collection, classification and analysis of evidence by allowing breaking down each research question into smaller, more operational questions which will serve as guide to the structured interview.

### 6.5.1 Propositions linked to research question one

**Research question 1:**

*Does the international business need to develop unique capabilities to succeed in international markets over and above those needed to succeed in domestic markets?*

**Propositions:**

| | |
|---|---|
| Proposition 1.1 | Domestic and international firms develop the same set of competences and capabilities. |
| Proposition 1.2 | Internationalizing firms may require undertaking morphological changes in their capabilities in order to factor in the increased levels of complexity and dynamicity prevailing in international markets. |
| Proposition 1.3 | The capabilities' importance and relevance may change when moving from domestic market to international markets. |

Proposition 1.4 Dynamic capabilities will become a critical success factor in international markets.

### 6.5.2 Propositions linked to research question two

**Research question 2:**

*Does the existence of knowledge management capability allow the manager of an exporting SME break the path-dependency of its strategic internationalization decisions by enlarging the firm's productive opportunity set?*

**Propositions:**

Proposition 2.1 A well-developed and well-functioning knowledge management capability favours the identification of a larger number of profitable business opportunities, and the identification of business opportunities of different nature.

Proposition 2.2 A well-developed and well-functioning knowledge management capability favours international strategic ambidexterity and helps breaking path-dependency of international strategic decisions by allowing the business to think differently and address strategic decisions from an unconventional and/or new perspective.

Proposition 2.3 A well-developed and well-functioning knowledge management capability reduces perception of risk of undertaking new endeavours (by allowing the managers to better analyse business opportunities) and reduces path-dependency of international strategic decisions.

Proposition 2.4 A well-developed and well-functioning knowledge management capability allows the manager make a better assessment of the current (and potential) production and marketing capabilities of the business, as well as the business current and future endowment of resources, leading to better strategic decisions.

### 6.5.3 Propositions linked to research question three

**Research question 3:**

Does the existence of knowledge management capability facilitate the improvement of existing, and development of new, capabilities (operational or dynamic) critical for the success of the export business?

**Propositions:**

| | |
|---|---|
| Proposition 3.1 | A well-developed and well-functioning knowledge management capability helps improve the effectiveness and efficiency of business processes. |
| Proposition 3.2 | A well-developed and well-functioning knowledge management helps making business processes more flexible and adaptable to different market conditions. |
| Proposition 3.3 | A well-developed and well-functioning knowledge management capability helps the manager better understand the business endowment of resources, its current production and marketing capabilities, and make better operational and strategic decisions. |

### 6.5.4 The units of analysis

As Yin (2013) points out, the identification of the unit(s) of analysis is critical as it is related to the fundamental problem of defining the "case" to be studied. To do this important step correctly it is very important to adequately define and bound the case.

When it comes to the definition and bounding of the unit of analysis, the research questions provide valuable guide as both are intimately related. This work will analyse two units of analysis at each enterprise:

1. The first unit of analysis consist of the department, unit and/or group of individuals in charge of strategy design and planning within selected small and medium sized enterprises of the Basque Country. This unit of analysis is clearly linked with research question one and three, and provides valuable inputs to answer research question four.
2. The second unit of analysis will consist of the marketing, production, and resource management departments of selected small and medium sized enterprises of the Basque Country. This unit of analysis is associated with research question two and three.

Having two units of analysis for each enterprise turns this case study into an embedded case study. Multiple embedded case studies are the most complex type of possible case studies a researcher could undertake, but at the same time they offer the opportunity of an in-depth exploration in the nature of the subject matter, in this case successful international Basque SMEs.

### 6.5.5 Linking data to propositions

This refers to the analysis of case study evidence. As Yin (2013) points out, there exist few fixed formulas or procedures to guide the researcher, and success at this stage of the research greatly depends on the researcher's own style of rigorous empirical thinking and a satisfactory presentation of evidence and careful consideration of alternative interpretations. Probably the most important thing at this stage, more important than tools and procedures, is to know what to look for and to have an overall analytic strategy.

This work will follow the research propositions to lead and shape the data collection process. Propositions will help to organize the entire analysis, point to relevant contextual conditions to be described as well as explanations to be examined (Yin, 2013).

Following the findings of previous researchers (Yin, 2013; Miles and Huberman, 1994; Eriksson and Kovalainen, 2008), this study will use a codification system to properly process, classify, and analyse the data gathered during the desk and field research. As a result of the use of the codification system, research data will be divided into thematic or conceptual categories which may include further subcategories (Shank, 2002). This will be conducive to the identification of common patterns. The next chapter will further elaborate on this issue by describing the tools that will be used to gather evidence.

### 6.5.6 Criteria for interpreting findings

In order to correctly interpret the findings and add strength and credibility to the results, this research work will address divergent patterns and plausible rival explanations for each research question.

## 6.6 Number of cases

The number of cases that a research work of this characteristics should study is open to debate, and no clear answer is given by the available literature. In one extreme we find Hillebrand *et al*. (2001) who, in the context of theoretical generalization, claim that a single case is sufficient to generalize results and determine their validity. The original case would set the base line to analyse and understand all subsequent cases and their contrasting results, which will constitute replications or extensions of the original case. In the opposite extreme we find Eisenhardt (1989) who recommends that the number of cases should oscillate between four and ten, and the researcher should stop once it reaches theoretical saturation.

Other authors suggest that the optimum number of cases to study depends on the discretion of the researcher and the degree of certainty that she wishes to achieve (Rialp, 1998; Bonache, 1999). Céspedes and Sánchez (1996) suggest that a guiding factor should be the availability of cases and resources (i.e. time and money). Bonache (1999) suggest that the researcher should stop adding cases to the research work once she is confident she has been able to identify and isolate the different factors that would allow a proper explanation and prediction the topic under study.

It is also important to acknowledge that in a multiple case study, each case should be carefully selected having in mind whether literal replication (i.e. precise duplication with the aim of obtaining similar results) or theoretical replication (i.e. expecting to find contrasting results for predictable reasons) is sought. As highlighted by Johnston *et al*. (1999), the decision to analyse different contexts and alternative theories or hypothesis also conditions the minimum number of cases that will need to be studied.

***Table 33: Building theory through the study of multiple cases***

<table>
<tr><td colspan="6">THEORY</td></tr>
<tr><td>Case 1</td><td>Case 2</td><td>Case 3</td><td>Case 4</td><td>Case 5</td><td>Case 6</td></tr>
<tr><td colspan="2">Research in similar contexts</td><td colspan="2">Research in different contexts</td><td colspan="2">Research of rival theories</td></tr>
</table>

*Source: Johnston et al. (1999)*

Given the recommendations made by the relevant literature, the nature of the study, and the limitations of this research work, the number of cases have been limited to three. The selected

number of cases allows for literal and theoretical replication, as well as to analyse different contexts.

All the enterprises selected for this work are active in the machine tool sector of Gipuzkoa, and while they are affected by the same political, regulatory, and economic environment, they are active in different market niches. Enterprises A and B have been selected with the aim of performing a literal replication and obtaining similar results as they share many strategic and operational commonalities, despite being active in different market niches. Enterprise C has been chosen with the aim of performing a theoretical replication and obtaining contrasting results for reasons predicted by the theoretical model.

Enterprises A and B are highly innovative enterprises, with a very high export ratio and a sophisticated high value-added offer. The conceptual evolution of their offers, and their internationalization and capability development paths, are similar. Over the years these two enterprises have been recognized as being among the best enterprises of the Basque Country, and even in times of economic downturn they have managed to maintain or improve their market position. Enterprise C is the smallest of the three enterprises, and when compared with past and current competitors it has shown some degree of relative success in coping with market challenges. This enterprise shows the lowest levels of internationalization and the least noticeable evolution of its offer.

Lack of availability on the part of the enterprises and time limitations on the part of the researcher prevented the incorporation of a larger number of cases.

# CHAPTER 7: TOOLS TO GATHER EVIDENCE

## 7.1 Collection of evidence

Multiple sources of evidence were used in order to ensure the validity and reliability of the results and conclusions of this research work. Five complementary sources of evidence were of particular importance: documents (e.g. minutes of meetings, written reports, studies and evaluations, progress reports, internal records, etc.), archival records (e.g. organizational records), interviews, direct observation, and physical artefacts (Yin, 2013). The preparation of a data planning matrix (table 34) helped to focus and structure the collection of evidence and to identify the potential sources and the most adequate tools to gather the evidence.

An initial understanding of the current situation of the machine tool sector was acquired through the analysis of publicly available information gathered by AFM, the Spanish Machine Tool Association. Each enterprise was first contacted via letter informing them of the study and asking their willingness to participate and their permission to be interviewed. In order to legitimize the researcher, the letter included a cover letter or a direct telephone communication from The University of Deusto explaining the purpose of the research and encouraging the business to take part in it, a short biography of the researcher, and a one-pager providing further information on the research objectives. The letter indicated that the researcher would phone the business to learn if the manager was interested in participating in the case study. If the manager agreed, the subsequent steps were explained to the manager and an interview was scheduled.

The objectives of this first contact were: 1. to explain the manager the aim of the research work and present the tentative work plan; 2. to reassure management of the researcher's ethical commitment and discuss confidentiality issues; and 3. to identify key informants within the business that would be later interviewed.

Prior to the beginning of the field work, the researcher took the time to collect the following contextual information for each participating enterprise:

- The nature and strategic positioning of the enterprise;
- An idea about its production and marketing capabilities;
- Its historical background;
- The economic, political, and legal context in which the business conducts its activities;
- Previous research works that included the business;

- Other informants, external to the business, which could provide valuable information about the business.

In the case of some of the selected enterprises the researcher had the opportunity to meet with other researchers who had previously worked with the enterprises in question. All the information collected proved to be very valuable to fully understand and analyse each case.

***Table 34: Data planning matrix***

| What do I need to know? | Why do I need to know this? | What type of data would answer the questions? | Whom do I contact to find the data? | Which method(s) can I use to get the data? |
|---|---|---|---|---|
| The processes for strategy design, verification, and planning | I need to understand the processes to validate the morphology of the strategic competence suggested by the model; and to identify and diagnose critical points in the strategy making cycle. | A description of the different steps taken during the strategy making cycle.<br>Decision making rules. | Senior management and other staff participating in strategy making. | • Questionnaire<br>• Interview<br>• Minutes of meetings<br>• Internal reports |
| The type of information and knowledge that is used at each step of the strategy making cycle | I need to know this in order to determine whether managers had all the needed knowledge and information available at the time of making strategic decisions. | A description of the type of information and knowledge used for strategy making. | Senior management and other staff participating in strategy making. | • Questionnaire<br>• Interview<br>• Minutes of meetings<br>• Internal reports |
| The sources of the information and knowledge used for strategy making | I need to know where the information is coming from in order to determine if it comes from the "right" place and if there are "other" sources that should be used. Only by knowing where the information is coming from I will be able to determine if the information gathering, processing and transfer is done correctly. | A clear identification and listing of all information and knowledge sources. | • Senior management and others participating in strategy making.<br>• Marketing manager.<br>• Production manager.<br>• Managers in charge of information gathering, processing, and storing. | • Questionnaire<br>• Interview<br>• Internal reports |

*Source: Own work*

***Table 34: Data planning matrix (Cont.)***

| What do I need to know? | Why do I need to know this? | What type of data would answer the questions? | Whom do I contact to find the data? | Which method(s) can I use to get the data? |
|---|---|---|---|---|
| Degree of competence of those in charge of designing a strategy | I need to know this in order to determine whether strategy related problems should be attributed to lack of knowledge and skills of those performing the task. | A clear explanation of those in charge of strategy making of all the steps and linkages between steps in the strategy making process. | Senior management and other staff participating in strategy making. | • Interview |
| Current strategic positioning and history of strategic decisions (including internationalization) | To understand the evolution of the strategic path of the business and to determine whether the business shows path-dependency in its strategic decisions. | A description of the different strategies the business has followed and is following *vis-à-vis* each market it serves, as well as a description of alternative strategies that were considered but not pursued. | Senior management and other staff participating in strategy making. | • Questionnaire<br>• Interview<br>• Minutes of meetings<br>• Internal reports |
| Justification for the strategic decisions made and reasons why alternative paths were not followed. | To understand whether the business considers alternative solutions to the same problem, or prefers to stick to proven solutions. | A justification that includes an all-encompassing evaluation of the situation and not just a simple justification based on previous experience. | Senior management and other staff participating in strategy making. | • Questionnaire<br>• Interview<br>• Minutes of meetings<br>• Internal reports |
| Planned strategic moves for the near future. | I need to know this in order to determine whether the business is proactive or reactive to market changes and if it is able to think creatively about ways to improve its market position. | Ideas about how the business will position *vis-à-vis* expected market changes, plans for investment, plans to enter new markets, plans to change the offer the business is taking to the market, plans to change the way it conducts business, etc. | Senior management and other staff participating in strategy making. | • Questionnaire<br>• Interview<br>• Minutes of meetings<br>• Internal reports |

*Source: Own work*

***Table 34: Data planning matrix (Cont.)***

| What do I need to know? | Why do I need to know this? | What type of data would answer the questions? | Whom do I contact to find the data? | Which method(s) can I use to get the data? |
|---|---|---|---|---|
| Degree of satisfaction with the information and knowledge available for the processes. | To understand whether processes put in place to manage knowledge respond to the needs of end users, and therefore add value to the business. | An evaluation from the end user perspective of the value that the knowledge and information available in the business brings to the interviewee's work. | End users of knowledge and information such as top and middle management. | • Questionnaire<br>• Interview |
| What information and knowledge collection, process, transfer, and protection methods are used | To determine the degree of development of the knowledge management capability, to understand its morphology, and to determine the adequacy of the tools and techniques used. | A list and description of the processes, tools and techniques used to manage knowledge.<br><br>A justification for the implementation of each process and the use of each tool and technique would be requested. | Middle and senior managers in charge of managing knowledge and information. End users of information can describe the processes as they see them, and this may lead to the identification of the most adequate people to contact shall there not be one person in charge of knowledge management. | • Interview<br>• Internal documents |
| When were the knowledge management processes, tools and techniques started to be developed and used? | In order to link strategic and operational changes to the development of a knowledge management capability. | Implementation plans, internal evaluations, etc. | Senior and middle management | • Questionnaire<br>• Interview<br>• Internal documents |
| How does the enterprise determine whether its production and marketing processes need to me updated, upgraded, or discontinued? | In order to understand the monitoring mechanisms in place to determine the performance of operations (in isolation) and its impact on functional objectives. | Identification and justification of existence of monitoring mechanisms, as well as mechanisms used to transfer this information to the relevant persons for decision making. | Senior and middle management | • Questionnaire<br>• Interview<br>• Internal documents |

*Source: Own work*

***Table 34: Data planning matrix (Cont.)***

| What do I need to know? | Why do I need to know this? | What type of data would answer the questions? | Whom do I contact to find the data? | Which method(s) can I use to get the data? |
|---|---|---|---|---|
| How does the enterprise determine what changes need to be made in its production and marketing processes? How does the business determine the desired shape of the processes and capabilities? | In order to determine if and how the business shapes and proactively adapts its capabilities as a response to its strategic positioning, to market changes, and to technological innovations | Identification and justification of existence of mechanisms to identify and implement best practices. | Senior and middle management | • Questionnaire<br>• Interview<br>• Internal documents |
| How does the business determine its resource requirements? | In order to understand whether decision-makers have the necessary knowledge and information about the different businesses of the enterprises to make adequate resource decisions. | Identification of the factors that are taken into consideration, the sources of information for decision making, and a justification of the decisions made. | Senior and middle management | • Questionnaire<br>• Interview<br>• Internal documents |
| Whether the enterprise has been able to better achieve its functional objectives as a result of the implementation of knowledge management processes. | Because the achievement of the functional objectives is a quintessential requirement for the achievement of competitiveness. | Improvements in production and marketing efficiency and effectiveness.<br>Increase in market share. | Senior and middle management | • Questionnaire<br>• Interview<br>• Internal documents |
| Whether the enterprise has been able to become more flexible and adaptive to market changes as a result of the implementation of knowledge management processes. | Because flexibility to adapt to market changes is a key indicator of competitiveness. | Time to develop a new or adapt an existing offer to changes in the market; development of multipurpose processes and/or routines; acquisition of multifunctional resources. | Senior and middle management | • Questionnaire<br>• Interview<br>• Internal documents |

*Source: Own work*

***Table 34: Data planning matrix (Cont.)***

| What do I need to know? | Why do I need to know this? | What type of data would answer the questions? | Whom do I contact to find the data? | Which method(s) can I use to get the data? |
|---|---|---|---|---|
| Whether the business has been able to improve the efficiency in the use of its resources (i.e. whether there are productivity improvements). | Because improvements in the efficiency of resource utilization is an expected result of the knowledge management capability. | Various well known efficiency indicators developed for each resource, and the overall perception of efficiency of those supervising the use of resources. | Senior and middle management | • Questionnaire<br>• Interview<br>• Internal documents |
| The relative importance of the business capabilities in domestic and international markets. | This will help me to determine whether dynamic capabilities' importance increase with the dynamicity of the market. | Manager's identification and acknowledgement of the different environments, the critical factors for success in each market, and the operational implications of those differences. | Senior and middle management | • Questionnaire<br>• Interview<br>• Internal documents |
| The characteristics of the existing technological, structural and cultural infrastructure. | To determine whether these enablers are helping the proper management of knowledge. | Identification and description of the technologies used to manage knowledge;<br>Identification and justification of HR policies aimed to support the management of knowledge;<br>Vision and perception of organizational culture as viewed by those in charge of defining it and those affected by it. | Senior and middle management<br><br>Production and marketing personnel | • Questionnaire<br>• Interview<br>• Internal documents |

*Source: Own work*

## 7.2 Evidence collection tools

### 7.2.1 Letter template for SME managers

Datos de la empresa

San Sebastián, … de septiembre de 2014

Estimada/o …….:

Antes que nada quisiera presentarme. Mi nombre es Leonardo Iebra Aizpurua, soy investigador en formación dentro del Programa de Doctorado Competitividad Empresarial y Desarrollo Económico de la Deusto Business School (Universidad de Deusto). Paralelamente a mi labor de investigación trabajo para el Centro de Comercio Internacional, una agencia de cooperación técnica de las Naciones Unidas con sede en Ginebra, Suiza.

Actualmente mi trabajo de investigación intenta determinar cuáles son los factores de éxito de las estrategias de internacionalización de negocios mediante la utilización de un nuevo modelo teórico pensado específicamente para comprender como las pequeñas y medianas empresas vascas desarrollan sus capacidades para exportar. En tal sentido el trabajo busca particularmente comprender cuáles son las capacidades críticas para el éxito exportador, y cuál es la influencia de los procesos de gestión del conocimiento en las estrategias de internacionalización y en el desarrollo de ventajas competitivas sustentables.

Para tal fin, este trabajo incluye un estudio de casos de entre cuatro a seis empresas vascas que por su trayectoria, éxito internacional, y filosofía de gestión resulten de interés para servir como modelos para abordar la temática en cuestión. Entiendo que, en este sentido, (nombre de la empresa) es un referente dentro del tejido industrial de la Comunidad Autónoma del País Vasco. Por ello, junto con mis supervisores hemos considerado oportuno solicitar su colaboración, para que su caso forme parte de un estudio de casos múltiple de empresas vascas utilizando una metodología innovadora para el análisis de la competitividad empresarial.

Si tiene a bien participar en este estudio le hare llegar un cuestionario tendiente a recabar información sobre la empresa y para que sea completado por la gerencia general, y los responsables de producción y comercialización. Posteriormente se llevarán a cabo entrevistas personales con estas personas. En este estudio, las empresas participantes aportarán sus experiencias, su conocimiento aplicado y el valioso tiempo de las personas que actúen como interlocutores. Procuraré que, por ello, puedan recibir el reconocimiento de la comunidad universitaria y empresarial, así también como transmitirles los resultados y las conclusiones del estudio.

Le reitero mi agradecimiento por la colaboración y el tiempo que dedica a este trabajo de investigación. En los próximos días me comunicaré con la empresa por vía telefónica para conocer su decisión, y eventualmente discutir los próximos pasos y fijar la fecha para un primer encuentro.

Atentamente.

Leonardo Iebra Aizpurua

Estudiante de doctorado,
Doctorado en Competitividad Empresarial y Desarrollo Económico
Deusto Business School - Universidad de Deusto

### 7.2.2 Researcher's short biography

**Leonardo D. IEBRA AIZPURUA**
iebra.aizpurua@gmail.com

Estudiante de doctorado
Universidad de Deusto
Doctorado en Competitividad Empresarial y Desarrollo Económico

Leonardo Iebra Aizpurua (Argentina, 1975) trabaja actualmente para el Centro de Comercio Internacional, una agencia de cooperación técnica de las Naciones Unidas con base en Ginebra, Suiza, para el desarrollo de las exportaciones en países en vías de desarrollo. Leonardo cuenta con más de once años de experiencia en el desarrollo e implementación de programas de capacitación y asistencia a PYMES en América Latina, África, Asia, Medio Oriente, y los estados postsoviéticos. Anteriormente Leonardo realizó trabajos para la Embajada Argentina ante la Unión Europea en Bruselas y para la Dirección General de Economía y Finanzas de la Comisión Europea.

Desde hace cinco años Leonardo se encuentra realizando trabajos de investigación tendientes a completar sus estudios de doctorado en la Universidad de Deusto bajo la dirección de los doctores Cristina Iturrioz Landart (Deusto) y Oskar Villarreal Larrinaga (UPV).

### 7.2.3 Brief explanation of the research objectives

Trabajo de investigación: "**Capacidades dinámicas: Un factor clave en la internacionalización de PYMEs**"

Este trabajo de investigación se encuadra en la búsqueda de las fuentes de la competitividad empresarial. Para ello el autor ha desarrollado un modelo de análisis basado en una exhaustiva revisión bibliográfica así como en su experiencia personal asistiendo a pequeñas y medianas empresas. Dicho modelo permite comprender el funcionamiento del negocio desde un punto de vista integral resaltando las relaciones existentes entre la estrategia y el desarrollo de capacidades. Mediante la utilización de una metodología de investigación innovadora (estudio de casos) se pretende analizar y comprender la realidad empresarial no desde un punto de vista estrictamente teórico sino mediante el acercamiento a casos reales estudiados en su propio contexto que puedan aportar nuevos puntos de vista sobre la temática abordada.

Uno de los objetivos del trabajo es validar la existencia de una jerarquía de capacidades cuyo desarrollo conducen a la competitividad empresarial. Se prestará particular atención a aquellas capacidades que permiten al negocio adaptarse a los cambios de mercado y anticiparse a ellos con el objetivo de ser competitivo. En tal sentido se busca comprender la naturaleza e importancia de la relación existente entre los procesos de gestión del conocimiento y el desarrollo de capacidades tanto estratégicas como operativas en el contexto de la internacionalización del negocio.

Se busca comprender cómo la morfología y relación entre los procesos de gestión del conocimiento determina la identificación de oportunidades de negocio y la voluntad o no de la gerencia de explotar dichas oportunidades. Desde el punto de vista de las operaciones de producción y comercialización, se pretende comprender cómo y mediante qué mecanismos los procesos de gestión del conocimiento permiten al negocio adaptar y mejorar sus procesos en respuesta a cambios en el mercado.

Otro de los objetivos de este trabajo es determinar si para ser exitoso en sus emprendimientos internacionales el negocio ha de desarrollar capacidades únicas y exclusivas orientadas a mercados externos, o si basta con adaptar capacidades ya existentes para las operaciones en el mercado doméstico.

### 7.2.4 Initial email questionnaires

The original objective was to gather information from several key informants within each enterprise. For that purpose different questionnaires were prepared for the different informant groups (i.e. the business' strategist(s), the person(s) fulfilling the role of production manager, the person(s) fulfilling the role of marketing manager, production personnel, and marketing personnel) in an attempt to ensure respondents were asked questions directly linked with their areas of expertise and responsibilities. Unfortunately, top management of some of the enterprises declined the researcher's request to send questionnaires or interview staff, which forced the researcher to merge and combine questionnaires in an attempt to obtain all necessary information from only one source of evidence. The lack of access to internal informants was not such a big liability as originally expected. Due to the size and/or organization structure of the enterprise, the key informant in each enterprise embodied multiple roles and had sufficient information about all areas of the business.

The questionnaires were prepared in Spanish. Sensitive questions such as income and revenue were avoided as much as possible. The structure of the questionnaire was made as clear as possible, indicating its main sections, and providing explanations of key terms used. The reader can find in annex 1 the template questionnaire that was sent to the enterprises' senior management with some information on how they were constructed.

### 7.2.5 On-site structured interviews

As Seidman (1991) rightly points out, interviewing those individuals who work in the business and carry out its processes is the best technique to investigate an organization, institution or process. Personal interviews with several key informants were originally envisaged as the main tool to collect evidence for the case study, with the aim of gathering multiple points of view and realities inherent to the business. As mentioned earlier, some enterprises did not allow the researcher to interview staff, therefore there was only one person interviewed in each enterprise. The interview with this key informant covered all strategic and operational issues that would have been covered with the original set of intended informants. Due to the size of the enterprises, and the close involvement in operations of senior management, all necessary data was gathered.

It is acknowledged that while the interview enriches the collection of evidence by allowing both parties to explore the meaning of the questions and answers involved (Brener *et al*., 1985), the

researcher may influence the respondent with the way it constructs the questions, (Foddy, 1993) which may lead some to question the study's validity. There is no commonly agreed procedure to conduct interviews with research purposes (Kvale, 1996), but they are typically done following an unstructured or minimally structured format. To guide the discussions, open-ended interview questions were drafted based on the theoretical propositions, on the data planning matrix prepared beforehand, and on the responses obtained from the questionnaires. These questions served as a guide to the researcher, but in no case they represent an exhaustive list that the researcher attempted to go through with the interviewee. The model presented in chapter five of this work provided the general framework to structure the interview and analyse the information provided by the interviewees. In the course of the interview clarification and amplification questions were asked as a result of the information respondents' volunteered. Open-ended interviews offered the researcher the flexibility to reformulate the problem and modify questions and categories during the course of the discussion if deemed appropriate.

The interviews were recorded and the researcher collected handwritten notes. The researcher's interview notes and the full interviews were typed. An interview summary was prepared including all the relevant topics discussed and these notes were shared with the interviewees for their verification of what was recorded. This mechanism proved to be useful to validate the researcher's notes, and any modifications made by the participants were reflected in the final interview summaries used to analyse the case.

Annex 1 present the guidelines and sequence followed for the structured interviews.

### 7.2.6 Information codification and capability assessment tools

In the case of research question two this work is trying to determine the effects the knowledge management capability has on the effectiveness and efficiency of the business' strategic competence. In order to do this the researcher should be able to assess the maturity of those knowledge management processes that directly affect the business strategic competence, particularly those that confer the business the ability to break path-dependency.

With this in mind, and following the structure of the model presented in chapter five a diagnostic tool was designed. This tool will help to assess the level of maturity of each process within the strategic competence, and of a subset of knowledge management processes that directly affect this competence. The maturity scale prepared for each process will help the researcher to assign a value ranging from zero to 100 to each process depending on its level of maturity, and later to

get a consolidated value for the capability or competence in question. The guidance provided by the literature on how to construct a process maturity model is not satisfactory as the resulting maturity models tend to be generic and follow similar cumulative, relatively complex, and sometimes mechanical structures (Hammer, 2007; Maier *et al*., 2012; Rosemann and Bruin, 2005; Becker *et al*., 2009; Paulk *et al*., 1995; Siponen, 2002; Pee and Kankanhalli, 2009; Gottschalk and Khandelwal, 2004; Lee and Kim, 2001) Because of this, the maturity model presented in tables 35 and 36 are process specific and highlight the technical evolution the process needs to go through in order to adequately contribute to the achievement of the business' goal. Tables 35 and 36 present the diagnostic tool which includes a short definition of each process, a list of symptoms of underperformance, and a five-level maturity scale for each one.

The effective development of the knowledge management capability may require knowledge management processes to be supported by a repertoire of tools and techniques. Table 37 presents a non-exhaustive selection of tools and techniques which are commonly used by managers. Tools and techniques could be multipurpose; therefore they could be associated to more than one generic knowledge management process. The identification of the tools and techniques used by each enterprise is important as it will affect the morphology of the processes.

Research question three addresses the effect of knowledge management capability on the firm's ability to update and upgrade its existing capabilities, as well as to develop new capabilities. Given that we are not interested on the effectiveness and efficiency of the capabilities but rather at the way they change, it is not necessary to design a maturity-based diagnostic tool. Nevertheless it is important to understand the morphology of those capabilities. Table 38 and 39 present a codification of the production and marketing competences. Table 40 does the same for a selected group of processes that help build the resource management competence of the business and that are most affected by the internationalization of the business.

***Table 35: Diagnosing strategic competence***

| **STRATEGIC COMPETENCE >>>> CAPABILITY TO DESIGN A BUSINESS STRATEGY** | | | | |
|---|---|---|---|---|
| PROCESS | **GENERATION, EVALUATION, AND FILTERING OF BUSINESS IDEAS** | | | |
| DEFINITION | This process refers to the ability of the business to come up with new ideas, and turn those ideas into manageable concepts that could later be transformed into successful updates and upgrades of its products and/or services, as well as breakthrough business innovations. | | | |
| SYMPTOMS | ✓ The business does not seem to be able to generate profitable business ideas.<br>✓ The business generates many potentially profitable business ideas but is unable to ponder their feasibility and to choose which ones to pursue.<br>✓ The business seems to be unable to transform the business idea into a workable concept.<br>✓ The business does not keep a repository of business ideas for future use.<br>✓ The business is unable to determine, even broadly, what would be the implications in terms of resources and capabilities of the ideas it generates.<br>✓ The business is not aware of the new concepts and R&D developments its competitors are working on.<br>✓ The business does not follow technological changes in other related industries that could be applied to its products and services.<br>✓ The business seems not to have a clear idea of what the client is expecting from the product nor what is their "wish list" *vis-à-vis* the product type. | | | |
| MATURITY | | | | |
| Managers are passive *vis-à-vis* idea generation (i.e.: they wait for sudden inspiration) and tend to favour "proven formulas" and "me-too" products or services. | Managers use notebooks and other storing mechanisms to keep stock of ideas that could eventually turn into business opportunities, and uses checklists to identify opportunities.<br><br>No other mechanism of higher sophistication is used. | Managers use tools such as "customer journey maps" that place client's expectations and experience at the centre of the idea generation process.<br><br>No clear methodology exists to assess different business ideas. | Managers use customer-centred tools to identify business opportunities, and are able to identify simple criteria and scoring systems to assess the merit, viability, and risk of each business idea. | Managers use convergent and divergent idea-generating techniques, always focusing on the identification of new ways to satisfy client's needs.<br>Managers are capable of defining critical success criteria and thoroughly evaluate each criterion (including the business ability to protect the idea) with relatively sophisticated methods using various sources of information.<br>Managers are able to provide an adequate business definition for each business idea that is considered worth pursuing. |
| COMMENTS | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO DESIGN A BUSINESS STRATEGY | | | | |
|---|---|---|---|---|
| PROCESS | **MARKET IDENTIFICATION** | | | |
| DEFINITION | This process refers to the identification of the most suitable set of geographical markets for the business offer. This task entails the narrowing down of option to a handful of countries in order to guide and focus the later marketing research efforts of the business. This filtering of countries should be done taking into consideration factors such as regional trade agreements, non-tariff measures, transport routes, degree of familiarity with the market of customs agents, freight forwarders, and banks, etc. | | | |
| SYMPTOMS | ✓ The business is unable to provide a solid justification (other than unsolicited requests, personal contacts, or because competitors are targeting the same markets) of why it has decided to explore possibilities in each of the markets where it is active.<br>✓ Income, geographical and or cultural proximity seem to be the only factors the enterprise analyses when choosing which markets to target.<br>✓ The business is thinking of expanding its geographical scope but it is unable to determine which the best country to conduct further marketing research is. | | | |
| MATURITY | | | | |
| The business takes a passive stand *vis-à-vis* market identification and follows competition. | When selecting markets, the business simply looks at existing trade flows between countries to assess the attractiveness of a market. | For those countries where trade exist, the business identifies and assesses parameters that are relevant for the product group and the potential customers. | On top of analysing trade flows between countries and specific parameters, the business also considers the effect of existing non-tariff measures that affect its offer. | The business uses a full-fledged methodology that comprises all the previously mentioned activities, but it also includes marketing research activities. |
| COMMENTS | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO DESIGN A BUSINESS STRATEGY | | | | |
|---|---|---|---|---|
| PROCESS | **MARKET SEGMENTATION** | | | |
| DEFINITION | Focusing on a market/segment is essential for designing competitive strategies. Identification of the unmet needs/wants of a group of potential buyers whose numbers are sufficiently large to make the business profitable but at the same time small enough (optimum size) not to attract competition is the most important undertaking for management in strategy design. Segmentation has nothing to do with the number of buyers it has to do with needs of the buyer(s). | | | |
| SYMPTOMS | ✓ The business is not able to provide a clear definition of its market(s) and segments using measurable descriptors concerning clients' needs/wants.<br>✓ The business has not been able to identify specific descriptors about its potential buyers that would enable the business to identify potential customers.<br>✓ The business does not have any formal or informal mechanisms for interacting with buyer networks, industry associations etc. to collect information about competitors' offers and buyers' needs. | | | |
| MATURITY | | | | |
| The business does not use segmentation and targets any possible client that may want to buy its offer. | The business uses geographic and/or demographic variables to segment the market. | The business understands the importance of segmenting the market *vis-à-vis* clients' needs but is unable to identify those unmet needs in a consistent and reliable manner. | The business is fully capable of identifying clients' unmet needs using interviews and questionnaires on clients' expectations, satisfaction *vis-à-vis* product attributes, purchasing habits, etc. | The business is fully able to identify client's unmet needs and undertake a needs-based segmentation.<br><br>The business uses secondary segmentation variables (e.g.: geographic, demographic, psychographic, etc.) to profile the segments it has identified |
| COMMENTS | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO DESIGN A BUSINESS STRATEGY | | | | |
|---|---|---|---|---|
| PROCESS | **SEGMENT SELECTION** | | | |
| DEFINITION | Selecting one segment among the many identified is called targeting. The manager should ensure that segments identified are of optimum size; that is: be big enough for the business to gain maximum bargaining power and ensure the achievement of the fourth marketing objective, and small enough not to attract competitors' attention. | | | |
| SYMPTOMS | ✓ The manager cannot give a clear justification for the selection of the target segment.<br>✓ The business is having difficulties in expanding its market share as competition is fierce and new competitors are entering the market.<br>✓ The business is not making as much money as expected in the target market. | | | |
| MATURITY | | | | |
| The business does not use segmentation and targets any possible client that may want to buy its offer. | Segments are selected in an opportunistic manner without careful consideration of the current and future implications for the business. | In order to reduce risk the business follows the competition *vis-à-vis* segment selection and/or tends to select segments in the vicinity of segments already served by the business. | The business selects segments based on profitability and its production capabilities to manufacture the offer, independently of whether those segments are currently being served by competitors or they are in the vicinity of segments already served by the business.<br><br>Managers fail to undertake a thorough analysis of the expected behaviour of current and potential competitors. | For each segment identified the business identifies and evaluates the current state and expected evolution of relevant factors specific to the segment and the business' capabilities to serve it.<br><br>The business analyses the potential profits to be made, and the threats from potential competitors. |
| COMMENTS | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO DESIGN A BUSINESS STRATEGY | | | | |
|---|---|---|---|---|
| PROCESS | **OFFER DELINEATION AND POSSITIONING** | | | |
| DEFINITION | The products and services of a business are said to be offers once they are positioned. Positioning is done by mixing product features, its quality, quantity, price and delivery in such a way as to meet the unmet needs and wants of the target market/segment. It should be kept in mind that the purpose of positioning is a deliberate attempt of the business to defeat the competition in such a way that it deters retaliation. | | | |
| SYMPTOMS | ✓ The business does not seem to have clear positioning, or the positioning of its offers does not differentiate its products and services from the offers of competitors.<br>✓ The positioning of the products and services of the business does not seem to be based on a careful analysis of the unmet needs and wants of present and prospective buyers.<br>✓ The business did not evaluate the reactions of its present and prospective buyers to the positioning of its products and services before finalizing its decision.<br>✓ The managers of the enterprise seem to have no understanding of what positioning is all about and thus its products have no distinguishing attributes to provide the enterprise with a competitive edge. | | | |
| MATURITY | | | | |
| The business offer is conceived as a "me-too" version of what is already available in the market. | The business attempts to "add-value" to its offer by adding features to the offer over and above those already offered by the competition. These new features are not always the result of a careful analysis of clients' needs. | The business is able to identify the product dimensions that need to be manipulated but fails to come up with the right combination of attributes that would make its offer unique. | The business is able to come up with innovative offers that meet clients' needs but in some instances the production department is unable to manufacture the offer with all the required attributes due to technical complexities or excessive cost. | The business is fully capable of conceiving a unique offer that incorporates the right combination of attributes to satisfy customers' unmet needs better than competitors currently do.<br><br>The business includes the inputs from the production manager into the development of the offer to ensure that it is feasible from a production operations point of view. |
| COMMENTS | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO PLAN A BUSINESS STRATEGY | | | | |
|---|---|---|---|---|
| PROCESS | **IDENTIFICATION OF CRITICAL BUSINESS PROCESSES** | | | |
| DEFINITION | This task consists in identifying and determining the nature of the operations required for implementing the strategy. The criticality of processes would vary depending on the positioning of the business offer. Critical processes are those that are fundamental for the business to achieve the functional objectives set by the strategy, and are performing below their required level. | | | |
| SYMPTOMS | ✓ The business has identified too many or too few critical processes.<br>✓ Management is able to identify and label as critical those processes that are common across the industry but fails to identify those distinct key processes that are unique to the company and ensure its positioning.<br>✓ The business seems to be unable to accurately measure the performance level and resource requirements of its processes.<br>✓ The business is not clear about what makes its offer different and unique; therefore it cannot identify critical processes needed for the implementation of the strategy. | | | |
| MATURITY | | | | |
| The business is not capable of identifying what processes are critical for the implementation of the strategy. | The business can only identify important processes common across the industry but fails to identify those distinct key processes that are unique to the company and ensure its positioning. | Managers can identify important processes within the business but are unable to determine the current and expected performance level of each process. | Managers are able to identify processes and their current and expected performance but cannot determine the resource requirements in the case they are underperforming. | To determine critical processes the business is able to identify the level of strategic importance, the current and expected business' operational competence, and the resource requirements for each process. |
| COMMENTS | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO PLAN A BUSINESS STRATEGY | | | | |
|---|---|---|---|---|
| PROCESS | **PREPARATION OF STRATEGIC AND OPERATIONAL PLANS** | | | |
| DEFINITION | Strategic planning is a multi-step process that consists in the identification of activities and resources needed to implement the strategy. It helps to provide direction, set priorities, and serves as the basis for the development of operational plans. Operational plans link the direction provided by the strategy to functional objectives. It identifies milestones and explains how, or what portion of, a strategic plan will be put into operation during a given operational period. | | | |
| SYMPTOMS | ✓ The enterprise doesn't know the resources required to position its products.<br>✓ Functional plans are not understood by all.<br>✓ The production plan seems not to incorporate all aspects of the supply chain.<br>✓ Functional plans are not based on a sound strategy.<br>✓ Appropriate verifications of the concordance between positioning and functional objectives have not been made.<br>✓ The future of the enterprise cannot be foreseen with clarity.<br>✓ For some time now, production levels consistently showed seasonal or cyclical fluctuations. | | | |
| MATURITY | | | | |
| No planning. | Incomplete strategic plan that fails to identify long range objectives, and/or to properly align critical processes to those objectives. | Good strategic plan stating long range objectives and critical processes that would be conducive to the implementation of the strategy, but no operational plan. | Good strategic plan and an incomplete operational plan that fails to identify all things that need to be done and/or fails to identify necessary resources or where they will be sourced from. | On the basis of strategic plans, the business is capable of preparing detailed operational plans that serve as a roadmap for the entire business.<br><br>Operational plans explain in full detail what needs to be done, what resources (financial, information, human, physical, etc.) will be available for each activity, and provides operational objectives, deadlines and milestones. |
| COMMENTS | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO VERIFY AND ADAPT A BUSINESS STRATEGY | | | | |
|---|---|---|---|---|
| PROCESS | **HANDLING RISK AND UNCERTAINTY** | | | |
| DEFINITION | Risk is the probability or threat of a negative occurrence caused by potential events. Managing enterprise risk includes establishing an enterprise risk management framework and policies, and overseeing enterprise risk management activities. This process is aimed at protecting the business wealth and competitive position by reducing the chance that a particular event will take place, and if it does take place, is should reduce its impact on the business strategy or its operations. | | | |
| SYMPTOMS | ✓ The business pays very high insurance premiums<br>✓ The business is target of legal actions from competitors, unsatisfied customers, and/or regulators<br>✓ Managers are not aware of the events that could cause a loss or disruption to the business<br>✓ The business seems to be highly-dependent on a small number of customers<br>✓ The business seems to be highly dependent on a small number of major suppliers<br>✓ Employees seem to view the business as a short-term employment option<br>✓ Critical employees for the success of the business seem not to be engaged with the business<br>✓ Staff seem to face occupational health and safety risks (e.g. they work in a dirty or hazardous environment, they travel extensively by car, etc.)<br>✓ The business seems to struggle to pay its debts when they are due<br>✓ The business accounts receivable seems too large and/or it has been forced to write off bad debt from its books<br>✓ The business seems to have difficulties to cope with exchange rate fluctuations, leading to unexpected gains and losses | | | |
| MATURITY | | | | |
| Managers are not aware of the events that could cause a loss or disruption to the business | Managers have been able to identify some events that could pose a risk to the business, but they are not able to ascertain the likelihood of their occurring and how serious would they be if they occur. | The most important risk events seem to have been identified and assessed.<br>Some mitigation procedures seem to be in place, but there is no systematic procedure to identify and mitigate risks, as well as no corporate policy to address risk and uncertainty. | All major risk events have been identified, classified, and assessed. Risk mitigation procedures have been put in place, and the business has a risk mitigation policy in place.<br>Minor risk events do not receive the necessary attention due to resource constraints. | Managers have been able to thoroughly identify and classify all events that could pose a risk to the business, their likelihood of occurrence, and the impact they would have for the business.<br>For each possible event, management has developed and implemented risk mitigation policies and procedures commensurate with the level of risk the business is willing to accept.<br>Procedures are regularly monitored to ensure they are properly implemented. |
| COMMENTS | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO VERIFY AND ADAPT A BUSINESS STRATEGY | | | | |
|---|---|---|---|---|
| PROCESS | **PERIODIC STRATEGY UPDATE AND ADAPTATION** | | | |
| DEFINITION | Changes in the internal or external conditions can ruin a seemingly successful strategy. Managers should be able to monitor changes in the market as well as within their businesses, and take corrective measures when needed. | | | |
| SYMPTOMS | ✓ The business seems unable to predict market changes.<br>✓ The industry seems to be taking a different path that originally predicted but the business seems to be unable to react to those changes fast enough.<br>✓ The business has difficulties in rapidly identifying what needs to be changed in the strategy once changes in the market place occur.<br>✓ The business has chosen a "follower" approach to competition where it replicates the strategic and operational decisions made by competitors. | | | |
| MATURITY | | | | |
| The business only reviews and updates its strategy when there is a crisis or it is evident that the strategy has failed to achieve its objectives. | The business changes its strategy as a result of competitors changing theirs, and it usually follows the same strategic direction as the competition. | The business keeps track of whether the current strategy has delivered the desired results. Based on this, the business would determine whether changes in the strategy are needed or not. | On top of checking for the achievement of expected results, managers periodically review the assumptions made (i.e.: about customers, competitors, business capabilities and resources) during the strategy design phase in order to identify deviations that could lead to the need of adapting the strategy. | The business follows a forward looking strategy adaptation policy by which it keeps track of market changes in order to predict where the market would go and adapts its strategy based on where it believes the market would move next. The objective is to benefit from "first mover advantages".<br><br>The business is also capable of determining whether a new strategy is needed rather than an adaptation. |
| COMMENTS | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO VERIFY AND ADAPT A BUSINESS STRATEGY | | | | |
|---|---|---|---|---|
| PROCESS | **IMPACT ASSESSMENT** | | | |
| DEFINITION | This task refers to the managers' responsibility to monitor the implementation of the strategy and the achievement of expected objectives. Through this process the manager should be able to respond to the following question: Is the enterprise meeting its objectives and is the strategy providing the intended results? | | | |
| SYMPTOMS | ✓ The business is unable to compare expected with actual results.<br>✓ The business does not have the systems in place to determine the sources of the deviations.<br>✓ It seems that the business cannot measure progress towards the business functional objectives.<br>✓ The business seems to be unable to collect information about competitors' and industry-wide performance in order to conduct benchmarking analysis. | | | |
| MATURITY | | | | |
| Management is unable to determine whether strategic and/or functional objectives have been met as either success indicators have not been identified, or the business is unable to gather and/or process the necessary information to determine its accomplishments. | An impact assessment system exists but it lacks acceptance from employees as it is a purely top-down cascading approach linked to the strategic thinking of management, but lacking the insights of those at the bottom implementing the business' processes and routines. | Management is able to measure the individual performance of all (or most of) the units within the business, but struggles to get the consolidated picture and determine if the business as a whole is achieving its objective or not. | Management is capable of determining whether the business as a whole, and each of its functions has achieved its objectives, but is unable to provide a prognosis in the cases where underperformance has been detected. | Management has a consolidated view of the business' performance levels, and is fully capable of determining the degree of achievement of all strategic and functional objectives.<br><br>A coherent system exists to measure performance that combines top-down (strategic) and bottom-up (operational) approaches.<br><br>Management is able to identify areas of underperformance that lead to the non-achievement of the business objectives, to determine the causes of underperformance, and to provide suggestions for improvement. |
| COMMENTS | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO DESIGN AND IMPLEMENT AN ORGANIZATIONAL STRUCTURE | | | | | |
|---|---|---|---|---|---|
| PROCESS | **DEVELOPING ORGANIZATION STRUCTURES** | | | | |
| DEFINITION | Managers need to develop a practical organizational structure which details how individual authorities and responsibilities are related to one another to best meet the short and long-range goals of the enterprise. | | | | |
| SYMPTOMS | ✓ Management personnel avoid taking personal responsibility concerning problems.<br>✓ Employees are being held accountable for conditions over which they have no control.<br>✓ Different employees have authority or responsibility for the same operation or it is common to find employees responsible for more than one superior.<br>✓ The enterprise does not have an enterprise chart, or position descriptions that are currently enforced.<br>✓ The enterprise has too many layers of authority or has too few or too many departments or functional activities.<br>✓ The feeling that "accomplishing anything in this enterprise is always difficult" seems common.<br>✓ The enterprise lacks team effort and experiences low morale among its employees.<br>✓ It is common to experience communication breakdowns leading to orders not being shipped, schedules getting off track, and customers being left hanging | | | | |
| MATURITY | | | | | |
| There is no clear organizational structure and responsibilities assigned as everyone seems to be doing a bit of everything. | The business has an operational organizational structure, but seems to be inadequate for the type of business (e.g. flat structures are better for start-ups or companies that research, develop and manufacture new products as it promotes two-way information flows and encourages innovation; hierarchical structures are better for distribution companies or a chain of retail outlets, or businesses in stable markets). | The business has the right business structure for the type of business but it presents some deficiencies in terms of distinctions of roles, assignments of responsibilities, and establishment of rules by which the different groups operate within the business. | Everything seems to be correct in terms of the design of an organizational structure, and most formal operational issues have been addresses (i.e. authority and job responsibilities are clearly assigned, rules and procedures have been established, etc.) but the business seems to suffer from deficiencies in communication and information flow. | The business organization structure is adequate for the type of business, and flexible, while assigning clear unambiguous roles and responsibilities to every department and employee, preventing overlaps and duplication of efforts.<br><br>The organization structure defines a clear hierarchy of decision making and authority.<br><br>The organization structure facilitates information flow, communication and collaboration, and smooth work flow. |
| COMMENTS | | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO DESIGN AND IMPLEMENT AN ORGANIZATIONAL STRUCTURE | | | | | |
|---|---|---|---|---|---|
| PROCESS | **DEVELOPING POLICIES, SYSTEMS AND PROCEDURES FOR ADEQUATE GOVERNANCE** | | | | |
| DEFINITION | Proper management requires the development of effective methods to exercise control and facilitate planning or coordinating action. | | | | |
| SYMPTOMS | ✓ The enterprise lacks clearly defined policies.<br>✓ Nothing gets done since most employees are afraid to act.<br>✓ Managers often postpone decisions.<br>✓ The enterprise has no policy manual.<br>✓ There is disagreement among employees about the meaning of policies.<br>✓ It takes a long while for the enterprise to react to changes in the business environment as no one knows whether they should react and how<br>✓ Top management seems to make conflicting decisions that confuse employees<br>✓ Office work is too cumbersome,<br>✓ Office work is not accurate, or not reliable.<br>✓ Office procedures and systems do not seem to be accomplishing their intended purposes.<br>✓ There are too many office employees with possible duplications of efforts.<br>✓ There are too many forms (e.g., work order, leave, over-time, sales, accounting, etc.) or almost no forms.<br>✓ The enterprise does not use up-to-date technology in its offices<br>✓ No one in the enterprise has the time, background, or ability to develop effective methods of accomplishing paper work or other internal communication needed to exercise control and facilitate action. | | | | |
| MATURITY | | | | | |
| The business has no written policies. Past practices and ad-hoc decisions made by senior and middle managers guide the employees on their daily work. | There are written policies but they do not necessarily reflect the management philosophy and overall objectives of the business. For this reason policies are seldom followed or enforced. | There are written policies but they are too cumbersome, therefore generate confusion and make people waste time. | Written policies exist; they are clear and provide a good framework to facilitate the work of the business.<br><br>Some policies seem outdated; do not fully reflect the current situation of the business, and constrain the flexibility needed for the business to adapt. | There is a policy committee that meets and reaches consensus on specific policy statements by reviewing past practices and traditional approaches to certain situations as well as the latest legal requirements and management techniques. The committee ensures policies are always updated and remain flexible to allow the business to adapt to ever changing market conditions.<br>The business has clear unambiguous policies that govern how the business performs its work on a day to day basis. | |
| COMMENTS | | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO INNOVATE AND DYNAMIZE | | | | |
|---|---|---|---|---|
| PROCESS | **CONDUCTING BASIC AND TECHNICAL RESEARCH** | | | |
| DEFINITION | Companies can produce or gather research about innovative processes, products, markets and/or technology relevant to the business. Basic and technical research can be produced by R&D departments in the company or gathered by searching and reviewing research produced by other organizations. A manager must make sure the company either generates this information allocating resources to R&D or ensure the available research is followed and applied to improve the operations of the business. | | | |
| SYMPTOMS | ✓ Management does not feel responsible for contributing to the general field of knowledge.<br>✓ The company is not effectively using its qualified staff to conduct basic research and apply new scientific knowledge.<br>✓ Competitors are more intensely engaged in basic research.<br>✓ Foreign countries are making basic discoveries in this product class, making international competition difficult.<br>✓ Organizations such as universities, are making too few or inadequate contributions to basic scientific knowledge in this industry.<br>✓ The company executives do not recognize that the long-term survival of the company is ultimately dependent upon continuing basic research.<br>✓ There is very little recent information about products, markets and technology. | | | |
| MATURITY | | | | |
| The business does not do any sort of research, nor is aware of research and innovation programmes targeting SMEs. | The business keeps track of the research conducted by competitors, particularly large companies in the same industry in order to adapt their findings to its offer and its operations. | The business is not able to afford its own research department but is fully aware and keeps track of the results obtained by government or university programmes that conduct basic and technical research in areas of interest to the business. | The business has its own research department (even if funded by public funds). | In order to profit from others' research work, and to leverage its own work, the business has joined R&D networks and is conducting joint research projects with other businesses and/or research institutions. |
| COMMENTS | | | | |

*Source: Own work*

| STRATEGIC COMPETENCE >>>> CAPABILITY TO INNOVATE AND DYNAMIZE | | | | | |
|---|---|---|---|---|---|
| PROCESS | **CAPABILITY DYNAMIZATION** | | | | |
| DEFINITION | The process refers to the business' ability to systematically renew their capability portfolio by creating new capabilities, shedding old ones, renewing or altering existing ones. Capabilities dynamization is the outcome of a combination of two complementary things. On the one hand they are the result of rapid learning, and the tailored and logically-structured solutions advanced by managers (i.e. the result of ad-hoc solutions based on improvisation and sophisticated cognition). On the other hand they are the result of systems and procedures through which the organization systematically generates and modifies its routines and processes in pursuit of improved effectiveness (i.e. the result of specific type of innovation routines). The former is most influential in cases of radical capabilities renewal, the latter in cases of evolutionary innovation-led dynamization. | | | | |
| SYMPTOMS | ✓ The company can only compete on the basis of low prices<br>✓ The business has been unable to cope with the pace impose by competitors and is losing market share.<br>✓ The business has low levels of innovation and seems not to be capable of generating breakthrough solutions.<br>✓ The company's product line seems too narrow and not well positioned.<br>✓ The company seems not responding to the changing needs of the users.<br>✓ Competitors seem to have broader or better-positioned product lines.<br>✓ The company has made too few product changes in recent years.<br>✓ Competitive development is very likely to make one or more of the present products of the company obsolete. | | | | |
| MATURITY | | | | | |
| Managers seem incapable of identifying those capabilities that constitute the pillars of the business' current value proposition (i.e. not those important for all players in the industry but those specific for the business), nor those that would be critical in the near future as a consequence of foreseen market changes. | While capable of identifying critical capabilities, the business is unable to determine unequivocally which are the critical processes that confer the capabilities their uniqueness, and what the strategic and operational alternatives are for renewal, redeployment, and/or recombination of each process and capability. | When addressing the issue of capability dynamization the best the business can do is to try to copy and/or acquire what competitors have done in order to maintain a minimum level of capability development that allows it to compete in the market. | The business has the necessary knowledge and know-how to dynamize some of its critical capabilities (most likely production-related), but it lacks the ability to do it in a systematic and all-encompassing way with all of the business capabilities. | Managers are capable of identifying all critical capabilities, their unique differentiating characteristics, the life-cycle stage at which each one is, and the strategic and operational alternatives open to each capability. They can thoroughly analyse all processes that constitute each capability and identify unique, innovative and more effective ways of undertaking specific routines aimed at enhancing the capabilities' performance. | |
| COMMENTS | | | | | |

*Source: Own work*

***Table 36: Diagnosing knowledge management for strategic purposes***

| **RESOURCE MANAGEMENT COMPETENCE >>>> CAPABILITY TO MANAGE KNOWLEDGE AND INFORMATION >>>> KNOWLEDGE IDENTIFICATION** | | | | |
|---|---|---|---|---|
| PROCESS | **IDENTIFYING AND ANALYSING THE BUSINESS' RESOURCE REQUIREMENTS** | | | |
| DEFINITION | All managers need to collect and interpret internal and external information to decide what the resources necessary to manage the business will be. Managers need to gather and analyse this information to make sure that the enterprise will be able to acquire and allocate those resources when needed. | | | |
| SYMPTOMS | ✓ The enterprise seems to have failed to prioritize its objectives and business processes and therefore cannot decide what information is pertinent for effective and efficient management.<br>✓ The enterprise does not have a feasibility plan, or has one but failed to check its accuracy.<br>✓ There are frequent complaints about the inadequacy of physical facilities but the enterprise has no money to replace capital equipment.<br>✓ The enterprise does not seem to have a systematic way of calculating working capital requirements.<br>✓ The enterprise's business is growing but there are no plans or funds for expansion of facilities.<br>✓ The enterprise's capabilities seem to have grown out of proportion or there seem to be unnecessarily investments in plant and facilities.<br>✓ There seems to be a shortage of qualified personnel to perform certain key activities. | | | |
| MATURITY | | | | |
| The business is not able to determine in advance what resources with what characteristics are needed to implement critical processes. | The business seems to be able to partially determine what resources are needed to develop critical processes | The business seems to be capable to determine the resource requirements to develop critical processes but does not know where those resources could be procured. | The business is able to identify the resources required to develop critical processes, but can only partially determine where those resources could be procured. | The business is fully aware of the quantity, quality, time and cost requirements of all the resources that are needed to implement all critical processes, and knows how and from where to acquire each one of those resources. |
| COMMENTS | Direct impact on:<br>Strategic Competence – Capability to Plan a Business Strategy | | | |

*Source: Own work*

| RESOURCE MANAGEMENT COMPETENCE >>>> CAPABILITY TO MANAGE KNOWLEDGE AND INFORMATION >>>> KNOWLEDGE GENERATION | | | | | |
|---|---|---|---|---|---|
| PROCESS | **EVALUATING CUSTOMERS' REACTIONS** | | | | |
| DEFINITION | To determine how the buyers receive the offers of the enterprise and whether the business is communicating effectively with its target market a manager needs to gather information about consumer attitudes towards the business' offer. To build solid and long-lasting relations with the clients, companies need to acquire and use information about how clients assess the business offers. | | | | |
| SYMPTOMS | ✓ The enterprise does not know what is liked and disliked about its products.<br>✓ The enterprise has no information about what the buyer likes and dislikes are about competitive and substitute products.<br>✓ The enterprise has no information about buyer likes and dislikes about its practices, policies and communications.<br>✓ The enterprise recognizes the need to make changes in its product positioning strategy but does not have sufficient information to start.<br>✓ No one in the enterprise has the time, background, or ability to carry out an attitude survey.<br>✓ The enterprise has no access to studies and surveys in its market/product carried out by outside independent agencies.<br>✓ Management is unable to determine how high switching costs are. | | | | |
| MATURITY | | | | | |
| The business does not know how clients value each of the attributes of the different offers available in the market. | The business is mostly passive when it comes to collecting information about clients' perceptions. When information is gathered, it is done in an ad-hoc manner. | The business is able to gather some information about clients' perceptions of its offer, but this information fails to portray a definitive picture. | The business is able to gather sufficient information to understand how clients feel about its offer, but encounter difficulties in understanding how clients feel about competitors' offers. | The business is fully aware of the clients' views *vis-à-vis* the attributes of its offer, and that of its competitors. | |
| COMMENTS | Direct impact on:<br>Strategic Competence – Capability to Plan a Business Strategy | | | | |

*Source: Own work*

| RESOURCE MANAGEMENT COMPETENCE >>>> CAPABILITY TO MANAGE KNOWLEDGE AND INFORMATION >>>> KNOWLEDGE GENERATION | | | | | |
|---|---|---|---|---|---|
| PROCESS | **IDENTIFYING AND UNDERSTANDING INDUSTRY TRENDS** | | | | |
| DEFINITION | An on-going business needs to identify, analyse and keep track of its present domestic and international competitors in order to become or remain competitive. Knowledge of competitors' strategies is essential in order to make a competitive offer to target buyers. Knowledge of the strategies of competitors and their retaliatory capacities is essential to design effective strategies. | | | | |
| SYMPTOMS | ✓ The business will not have adequate knowledge of what specific needs and wants of the buyers its competitors are addressing.<br>✓ The business will be lacking established procedures to track qualitative and quantitative information on reactions of the buyers to the strategies of the competitors exhibited by their switching behaviour from and to brands.<br>✓ The business will be lacking established procedures to track qualitative and quantitative information on the retaliatory capacities is of its competitors. | | | | |
| MATURITY | | | | | |
| The business is not able to identify neither the number nor the characteristics of the competing offers available in the market. | The business knows its main competitors but cannot describe how they are trying to get customers to buy from them. | The business is aware of the most important competing offers available in the market, although is unable to give a full description of their characteristics and positioning strategies. | The business has a clear idea of the positioning characteristics of competing offers in the market and how they differentiate from its own offer. | The business is fully aware of the positioning strategies of its competitors and the attributes of their offers. Furthermore, the business is monitoring the threat from potential new entrants in the market. | |
| COMMENTS | Direct impact on:<br>Strategic Competence – Capability to Design a Business Strategy | | | | |

*Source: Own work*

| RESOURCE MANAGEMENT COMPETENCE >>>> CAPABILITY TO MANAGE KNOWLEDGE AND INFORMATION >>>> KNOWLEDGE GENERATION | | | | |
|---|---|---|---|---|
| PROCESS | **EVALUATING CUSTOMERS' NEEDS, EXPECTATIONS & PURCHASING HABITS** | | | |
| DEFINITION | Managers must be aware of the different motivations and behaviours of the end-users of their products/services. Shifts in consumer attitudes or expectations, or the introduction of new product substitutes, can quickly change the willingness of customers to buy the products/services of a business. To keep up with consumer behaviours' managers must gather and use information concerning the willingness of potential buyers of selected markets/segments to buy a particular product. | | | |
| SYMPTOMS | ✓ No one in the enterprise has the time, background, or ability to carry out a study to determine the willingness to buy of a segment or market.<br>✓ The enterprise is considering possibilities of offering its existing products to new markets but cannot act on it as it does not know whether the market is willing to buy the product.<br>✓ The enterprise is considering possibilities of modifying its offers to its existing markets but cannot act on it as it does not know whether the market is willing to buy the product.<br>✓ The enterprise is considering possibilities of adding a new business to its existing portfolio but cannot act on it as it does not know whether the market is willing to buy the envisaged product.<br>✓ The enterprise does not know much about how its buyers decide to buy.<br>✓ The enterprise is considering alternative positioning strategies but cannot act on it as it does not have sufficient information about how it will affect the willingness of potential buyers to buy its offers.<br>✓ The enterprise seems to fail to track changes in buyer preferences. | | | |
| MATURITY | | | | |
| The business is unable to determine why clients buy its offer or that of the competition, and is unable to analyse and predict customer needs. | The business collects some information about their clients although there is no systematic and planned approach to collect customer information.<br>Information collected appears to be interesting but either is too difficult to analyse or seems not to have a clear purpose as it does not result in an improvement of the offer or a better relationship with customers. | The business has a system in place to systematically collect and process most of the relevant information from current and potential customers, by contacting customers directly but also by gathering information already available within the enterprise.<br>The system has its limitations in terms of the number and complexity of tools available to collect and process information. | The system in place allows the business to gather all relevant information about clients, to identify trends, determine cause and effect relationships, and set targets for the business.<br>The system seems to rely on past information (i.e. is retrospective in nature) and lacks a forward looking approach that will allow the business to predict changes in customers' expectations and behaviour. | The business is fully aware of the underlying motivations and expectations that prompt clients to buy its offer or that of its competitors.<br><br>The business is also capable of predicting changes in customers' needs, expectations and purchasing habits. |
| COMMENTS | Direct impact on: Strategic Competence – Capability to Design a Business Strategy | | | |

*Source: Own work*

| RESOURCE MANAGEMENT COMPETENCE >>>> CAPABILITY TO MANAGE KNOWLEDGE AND INFORMATION >>>> KNOWLEDGE GENERATION | | | | |
|---|---|---|---|---|
| PROCESS | **CONDUCTING MARKET POTENTIAL STUDIES** | | | |
| DEFINITION | Managers need to gather information about the ability of potential buyers to purchase a product. Market potential data determines which portion of the population can purchase the offer, based on different variables and determine the main characteristics of target markets. With this information managers can understand, predict, and influence consumer behaviour based on existing trends and actual consumer demand. | | | |
| SYMPTOMS | ✓ No one in the enterprise has the time, background, or ability to carry out a study to determine the potential of a segment or market.<br>✓ The enterprise is considering expanding to new markets but cannot act on it as it does not know whether the market has the potential to buy the offer.<br>✓ The enterprise is considering modifying its offer to its existing markets but cannot act on it as it doesn't know whether the market has the potential to buy the product.<br>✓ The enterprise is considering adding a new business to its existing portfolio but cannot act on it as it does not know whether the market has the potential to buy it.<br>✓ The enterprise has no way of identifying concealed potential to buy.<br>✓ The enterprise is considering alternative payment and collection schemes but cannot act on it as it does not have sufficient information about how it will affect the ability of potential buyers to buy its offers.<br>✓ The enterprise targets markets with high income without really examining them.<br>✓ Management is unable to determine customers' price sensitivity.<br>✓ Pricing policies are frequently changed and/or adapted. | | | |
| MATURITY | | | | |
| The business is unable to determine whether customers have the means to purchase the offer. | By means of uncontrolled measurements (e.g. studies of past sales data) the business has managed to have a rough idea of the purchasing power of its clients but cannot determine with accuracy how changes in prices will affect demand. | The business is able to conduct in-store customer expenditure surveys and/or buy-response surveys to get an idea of the customers' ability to purchase certain items, but is unable to conduct more sophisticated experiments that may yield more reliable information. | Managers are capable of conducting controlled experiments to estimate buyer's purchasing capability but it faces some difficulties to determine which the most adequate technique is to use in each case. Furthermore, it faces some difficulties in achieving the necessary degree of geo-demographic disaggregation | The business is able to accurately estimate the purchasing power of its clients, their capacity to acquire the business' offer, what portion of total expenditure customers devote to its offer, and their price sensitivity.<br>For doing this the business is able to use a variety of measurement techniques and select the most appropriate for each circumstance. Furthermore, the business is able to complement numerical estimates with soft managerial judgments obtained though thorough knowledge of the client. |
| COMMENTS | Direct impact on: Strategic Competence – Capability to Design a Business Strategy | | | |

*Source: Own work*

| RESOURCE MANAGEMENT COMPETENCE >>>> CAPABILITY TO MANAGE KNOWLEDGE AND INFORMATION >>>> KNOWLEDGE GENERATION | | | | | |
|---|---|---|---|---|---|
| PROCESS | **FORECASTING SALES** | | | | |
| DEFINITION | To verify business strategies and prepare operational plans a manager needs to obtain estimates of the sales volume for an offer for a specific period of time. Accurate sales forecasts allow the manager to plan appropriate production levels, decide appropriate marketing activities as well make decisions about planning and allocation of resources. | | | | |
| SYMPTOMS | ✓ The enterprise is using sales quotas or is planning to do so but does not know how or where to start.<br>✓ The enterprise does not have a cash budget as they do not know what sales revenues would be.<br>✓ The enterprise cannot prepare a purchasing-production-delivery plan as it does not have an estimate of sales.<br>✓ Personnel needs cannot be calculated as the enterprise does not know the future volume of business.<br>✓ There is no one in the enterprise with the time, background, or ability to carry out sales forecasting studies.<br>✓ The enterprise often needs to adjust its production programs causing hectic work schedules due to erratic, seasonal or unexpected orders.<br>✓ The enterprise needs for operational planning but does not know where to start. | | | | |
| MATURITY | | | | | |
| The business is unable to estimate the sales volumes of a specific offer and anticipate changes in sales trends. | The business can estimate sales volumes without much accuracy. | The business is capable of estimating sales volumes of the current offers within reasonable confidence boundaries, but it is still affected by “unexpected” events that affect demand. | The business accurately estimates sales for existing offers, but encounters difficulties to estimate them for the new offers it introduces in the market. | The business is fully capable of accurately estimating sales volumes for each one of its offers, current or planned, within a reasonable time period. | |
| COMMENTS | Direct impact on:<br>Strategic Competence – Capability to Design a Business Strategy | | | | |

*Source: Own work*

| RESOURCE MANAGEMENT COMPETENCE >>>> CAPABILITY TO MANAGE KNOWLEDGE AND INFORMATION >>>> KNOWLEDGE GENERATION | | | | |
|---|---|---|---|---|
| PROCESS | **UNDERSTANDING LEGAL, INSTITUTIONAL AND REGULATORY FRAMEWORK** | | | |
| DEFINITION | Managers should be able to identify and understand all regulations and procedures for establishing and obtaining operation licenses for their business, as well as those regulations that would affect the business offer. It is important that the business is able to identify ahead of time the key regulatory and legislative obstacles that their offer or the business itself could face in order to design and implement mitigation measures. Furthermore, the business should be able to identify government incentives (e.g. subsidies, training opportunities, trade missions, etc.) that may benefit its operations and the positioning of its offer. | | | |
| SYMPTOMS | ✓ The business is not aware of all regulations applicable to its offer | | | |
| MATURITY | | | | |
| The business is not aware of the regulations applicable to the business and its offer (e.g. need for an export license, sanitary and phytosanitary regulations, marking, labelling, and packaging requirements, etc.), nor the policies, institutions or regulators that may have an impact on its offer and/or the business. | The business has a god understanding of the local legal, institutional and regulatory framework, but is unaware of what laws, regulations, and institutions could affect its business in foreign markets. | The business has a good understanding about the legal, institutional, and regulatory environment in local markets. In terms of international markets, its knowledge is limited to the countries where it currently exports and this knowledge tends to be incomplete and not always accurate. | The business is aware of most common international regulations affecting its offer in local and international markets where it is active, but has difficulties to gather the same information for prospective new markets. | Managers are fully capable of identifying and understanding all legal and regulatory requirements (national and international) that that apply to the business and its offer. They are also capable doing it for those offers that are still in a development and/or prototype stage and did not reach the market yet.<br><br>The business knows which are the key institutions and policies (local and in the country where it exports or plans to do it) that could potentially have an impact (positive or negative) on the business and/or its offer, and understands how those policies and institutions affect the business. |
| COMMENTS | Direct impact on:<br>Strategic Competence – Capability to Design a Business Strategy | | | |

*Source: Own work*

***Table 37: Tools and techniques for managing knowledge***

| Tool or technique | Knowledge related purpose | | | | |
|---|---|---|---|---|---|
| | Identifying | Creating/Capturing | Storing | Sharing | Applying |
| Knowledge-capturing sessions with departing employees | | X | | | |
| Brainstorming | | X | | | |
| Peer assistance | | X | | X | |
| Learning reviews | | X | X | X | |
| After action review | | X | X | X | |
| Storytelling | | | | X | |
| Collaborative physical workspace | | X | | X | X |
| Knowledge cafe | X | X | X | X | X |
| Community of practice | X | X | X | X | X |
| Taxonomy | | | X | X | X |
| Knowledge worker competency plan | | | | | X |
| Topic, skill and knowledge mapping | X | | | | |
| Knowledge management maturity model | X | | | | |
| Mentoring scheme | X | X | | X | X |
| Documented libraries leading to doc. management system | X | X | | | X |
| Knowledge bases | X | X | X | X | X |
| Blogs | X | X | X | X | X |
| Social network services | X | X | X | X | X |
| Voice and voice-over-internet protocol (VOIP) | | | X | X | X |
| Building knowledge clusters | | X | X | X | X |
| Expert locator | | | | X | |
| Collaborative virtual workspaces | | X | X | X | |
| Knowledge portal | | X | X | X | X |
| Video sharing | | X | X | X | |

*Source: Own work based on Asian Productivity Organization (2010)*

***Table 38: Codification of the production competence***

| PRODUCTION COMPETENCE >>>> CAPABILITY TO MEET ATTRIBUTE REQUIREMENTS | |
|---|---|
| **PROCESS** | **NEW PRODUCT DESIGN AND PROTOTYPING** |
| DEFINITION | This task refers to the transformation of a product idea into a prototype, including its packaging. It includes a thorough assessment of the business development resources and understanding of the technical characteristics and functionality of the product. This process is critical for a complete understanding of the necessary capabilities the business needs to have; including personnel, equipment, and capital requirements. |
| SYMPTOMS | ✓ No one in the business seems to have the necessary understanding of critical design concepts such as colour, form, geometry, environmental perception, functionality, etc. needed to design a product.<br>✓ The business is not able to determine the operational implications in terms of materials, processes, parts, ergonomics, etc., of the products it designs.<br>✓ The business is receiving complains about the functionality, durability, or quality of its products.<br>✓ Customers encountered undesired and unpredictable results when using the product due to problems in the product design.<br>✓ Product failure rates are higher than those of competitors.<br>✓ The business does not to have the technical specifications for its products, or is not fully aware of what tools, equipment, and materials are needed to produce them.<br>✓ New product failure rates are high.<br>✓ Packaging seems to be inadequate for the product type, the way it reaches the customer, and for the message the business is trying to convey. |
| **PROCESS** | **PRODUCT MODIFICATION AND ENHANCEMENT** |
| DEFINITION | Dynamic markets, with ever chaining customer's needs, put constant pressure on businesses across industries to regularly update their product features and quality in minimal time. This task requires a full understanding of the product and the market, and a technical understanding of how the product is conceived to meet the customer's needs and expectations. |
| SYMPTOMS | ✓ The business does not have qualified personnel that fully understand the existing product architecture and technicalities.<br>✓ The business is aware that new features and functionalities could be added to the product in order to change the product's positioning or increase its value, but it does not where to start.<br>✓ The business is forced to follow competitors' moves as they are usually the ones that come up with product upgrades and updates.<br>✓ The business is aware that there are other complementary products in the market but is unable to determine how its offer could be integrated with those complementary products to give higher value to the client.<br>✓ The business seems not to know what the potential areas of product improvement are. |

*Source: Own work*

| PRODUCTION COMPETENCE >>>> CAPABILITY TO MEET ATTRIBUTE REQUIREMENTS | |
|---|---|
| **PROCESS** | **PRODUCT DISCONTINUATION** |
| DEFINITION | This task refers to the determination of when and why an offer should no longer be taken to the market as customers no longer demand it or is no longer profitable. A thorough analysis should include considerations such as the product's life-cycle, the profitability it brings to the business, the cost or complexity to produce, maintain, or support it, etc. |
| SYMPTOMS | ✓ The business has no way to determine how the products have performed and how they've evolved in the market.<br>✓ The manager seems not to be aware in which stage of the product life-cycle its products are.<br>✓ The business is unable to determine whether those products that are not profitable, will at any time in the near future, become a contributor.<br>✓ Management is unable to determine if a particular product is too costly to produce of sustain in the market.<br>✓ The business' product portfolio has grown too much making production operations extremely complex.<br>✓ The management is inclined to undertake a product line rationalization but is unable to determine where to start.<br>✓ Innovations and new product developments are difficult to fund as too much capital is devoted to the support of the existing product portfolio.<br>✓ Product upgrades usually end up competing with older versions of the same product. |
| **PRODUCTION COMPETENCE >>>> CAPABILITY TO MEET QUALITY REQUIREMENTS** | |
| **PROCESS** | **DEVELOPMENT OF QUALITY STANDARDS** |
| DEFINITION | Analysing the product, its components and performance to develop an acceptable quality level based on requirements such as competition, customer acceptance, industry-standards and economy of manufacture. |
| SYMPTOMS | ✓ The business doesn't apply standard national and international regulations<br>✓ There may be inconsistent views on which standards apply.<br>✓ There is a prevalence of outdated standards being applied.<br><br>These symptoms would normally occur due to a lack of information of market requirements and applicable standards. |
| **PROCESS** | **DEVELOPMENT AND IMPLEMENTATION OF QUALITY CONTROL PROCEDURES** |
| DEFINITION | Establishing procedures to keep quality within established limits through the use of accepted statistical or other techniques. Includes selection of the physical means such as measuring instruments, equipment and facilities to be used in the measurement of product quality. |
| SYMPTOMS | ✓ Quality inspection costs are high as there are production bottlenecks and inadequate instruments, equipment or facilities for quality inspection.<br>✓ Quality control procedures show variations depending on who is doing the inspection and when it is carried out.<br>✓ Substandard products our found in the finished goods inventory.<br><br>These symptoms are due to inadequate equipment for testing and lack of information. |

*Source: Own work*

| PRODUCTION COMPETENCE >>>> CAPABILITY TO MEET QUALITY REQUIREMENTS | |
|---|---|
| **PROCESS** | **DESIGN OF AFTER SALES SERVICE DEPARTMENTS** |
| DEFINITION | Developing the function, organization, and operations of product service departments, for the purpose of improving total quality. This involves developing standard policies and procedures for merchandise return, warranty servicing, repair, recalls, updates, upgrades, support, etc., and may include designing and running test applications for diagnostic purposes. |
| SYMPTOMS | ✓ There is no product service.<br>✓ The service quality is low.<br>✓ Consumer complaints about the products performance often go unanswered.<br><br>These symptoms are usually attributed to poor decisions concerning human resources, physical assets and finance. If in the case of subcontracting the service it could be related to poor decisions about network resources. |
| **PRODUCTION COMPETENCE >>>> CAPABILITY TO MEET QUANTITY REQUIREMENTS** | |
| **PROCESS** | **PRODUCTION PROCESS INGENEERING** |
| DEFINITION | Determining the nature and exact sequence of operations required for a given part or material in order to produce the finished product in the most efficient manner. Includes consideration of factors such as delivery dates, equipment, material flow, packaging, worker availability and capabilities. |
| SYMPTOMS | ✓ The specific sequence and processes used in the manufacture of a given part seems arbitrary.<br>✓ There is too much variation in manufacturing costs for different lots of the same part.<br>✓ The processing methods used in manufacturing are out-of-date and there is a high rate of scrap losses and/or damaged parts.<br><br>Poor physical asset decisions that may result from lack of financing and lack of information may have caused these symptoms. |
| **PROCESS** | **TOOL IDENTIFICATION AND DESIGN** |
| DEFINITION | Determining and designing the tools, jigs and fixtures for the manufacture of a given product. Distinct from process engineering in that emphasis is placed on holding devices and cutting or forming tools which are accessories to the actual process itself. |
| SYMPTOMS | ✓ The tools, jigs and fixtures are inadequate<br>✓ The quality of other small parts used in manufacturing is low.<br>✓ The handling of parts in and out of jigs is difficult and no measures are being taken to change this.<br><br>These symptoms are often due to lack of information and poor decisions concerning the physical assets |

*Source: Own work*

| PRODUCTION COMPETENCE >>>> CAPABILITY TO MEET QUANTITY REQUIREMENTS | |
|---|---|
| **PROCESS** | **PLANNING AND SCHEDULING WORK** |
| DEFINITION | Prescribing when and where to utilize stored capacity (service sector) or when and where each operation necessary for the manufacture of a part or product is to be performed for a given order by determining the movement of a part or product through the required manufacturing processes or operations for a specific order. |
| SYMPTOMS | ✓ Procedures to determine workloads for work sections, departments or machines for each order are non-existent, unclear or not communicated.<br>✓ The sequence of operations for different orders is difficult to determine.<br>✓ Staff are often working overtime to meet order delivery schedules or to refinish defective parts. |
| **PROCESS** | **DISPATCHING WORK** |
| DEFINITION | Setting into motion production activities with job orders authorizing operations, material and tool movement orders from stores to processing departments or from process to process for a given order. |
| SYMPTOMS | ✓ While fulfilling an order the business frequently faces shop floor delays, waste and consequently increased manufacturing costs.<br>✓ Machine operators are obliged to look for parts and supplies themselves to proceed with the order.<br>✓ Clear procedures do not exist to determine how and where a specific order should be produced.<br><br>These symptoms arise when poor decisions concerning human resources have been made and/or there is a lack of information. |
| **PROCESS** | **DESIGNING LAYOUT AND INSTALLING PRODUCTION FACILITIES** |
| DEFINITION | Using engineering studies of the production process, demand for goods, equipment required and available plant site to develop specifications for a new plant or for alterations to the existing plant, or to install a complete plant or any of its major parts in conformity with prior plans and specifications. |
| SYMPTOMS | ✓ The installation of plant facilities or supervision or coordination seems to have been done by unqualified staff.<br>✓ The existing buildings or other physical facilities and service equipment (e.g. cranes, heating systems, etc.) are inadequate.<br>✓ Space utilization is inefficient and handling of materials is complicated due to an ineffective plant layout.<br><br>These symptoms are usually due to inadequate financing and lack of information as well as ill -prepared human resources. |

*Source: Own work*

| PRODUCTION COMPETENCE >>>> CAPABILITY TO MEET COST REQUIREMENTS | |
|---|---|
| **PROCESS** | **BALANCING PRODUCTION** |
| DEFINITION | Determining the nature and exact sequence of operations required for a given part or material in order to produce the finished product in the most efficient manner. Includes consideration of factors such as delivery dates, equipment, material flow, worker availability and capabilities. |
| SYMPTOMS | ✓ There will be an accumulation of material between operations or between workstations possibly due to poor decisions concerning physical assets/infrastructure and lack of information about production processes.<br>✓ There will be a failure in fully utilizing the workforce and there may be a prevalence of idle personnel.<br>✓ There will be erratic machine usage and utilization even during regular manufacturing operations possibly due to poor knowledge about production processes and/or poor decisions concerning the physical assets/infrastructure.<br>✓ The combination of delays in delivery and the accumulation of work in process inventories may hint the existence of production bottlenecks. |
| **PROCESS** | **IMPLEMENTATION OF COST REDUCTION PROGRAMMES** |
| DEFINITION | Initiating a programme for reducing costs through improved methods, reduction of waste, and more efficient use of all available resources. Includes appraisal of the products and processes with respect to material, appearance, performance and manufacturing requirements. |
| SYMPTOMS | ✓ Products or the production processes costs are comparatively higher than those of competitors.<br>✓ Managers are not aware of the cost structure.<br>✓ The specific impact of inputs, manufacturing and delivery on costs are not known.<br><br>These symptoms can arise from lack of information on cost centres and programmes that would enable more efficient use of all the resources. |
| **PROCESS** | **DEVELOPING MAINTENANCE SYSTEMS** |
| DEFINITION | Developing a system for maintaining the physical assets of a business includes performing preventive maintenance for the periodic inspection of plant assets and equipment to uncover and correct conditions that might lead to production breakdowns or excessive wear. A well-planned preventive maintenance system covering all physical assets of a business will increase productivity, reduce prospective investment needs and result in cost savings. |
| SYMPTOMS | ✓ There will be signs of overuse of machines.<br>✓ There will be a high incidence of replacement parts for machines.<br>✓ There will be an inadequate, or no existing, budget, records of equipment maintenance or an organized schedule for maintenance. This could be due to a lack of information about the importance of maintaining machinery to reduce long-term financial problems. |

*Source: Own work*

| PRODUCTION COMPETENCE >>>> CAPABILITY TO MEET COST REQUIREMENTS | |
|---|---|
| **PROCESS** | **IMPLEMENTATION OF CONTINUOUS IMPROVEMENT PROGRAMMES** |
| DEFINITION | A detailed analysis of specific manufacturing operations, in order to distinguish between those that are necessary and those that can be eliminated and determining the best way of performing those that are necessary to improve efficiency. |
| SYMPTOMS | ✓ Different methods are used for performing similar operations.<br>✓ Competitive businesses are performing similar operations at a lower cost.<br>✓ There are unnecessary operations or parts of operations being performed.<br><br>These symptoms could arise due to lack of information about production processes and/or poor decisions concerning human resources. |
| **PROCESS** | **ESTIMATING PRODUCTION COSTS** |
| DEFINITION | Estimating manufacturing costs in terms of projected manufacturing schedules, and standard costs. Estimating direct costs and overheads may or may not be the basis of pricing, however, they must be known for the business to accurately calculate the expected profits. |
| SYMPTOMS | ✓ Standard costing schemes and procedures for calculating costs are inadequate.<br>✓ Cost calculations of similar offers vary without explanation.<br>✓ Records indicate frequent cases of excessive gain or loss on specific orders. |
| **PROCESS** | **LOCATION AND SITE PLANNING** |
| DEFINITION | Determining the best location for a plant, office or warehouse in order to meet the objectives of the enterprise or the needs of business functions. |
| SYMPTOMS | ✓ The manager is not aware that the present location has become unnecessarily expensive.<br>✓ The manager may be aware of the inadequacy of the present location but lacks the knowledge to decide on whether it would be more expensive to rebuild or to expand in the present location or move elsewhere.<br>✓ An analysis of the location of the plant or warehouse facilities does not exist.<br><br>These symptoms are mainly due to lack of information. |

*Source: Own work*

| PRODUCTION COMPETENCE >>>> CAPABILITY TO MEET TIME REQUIREMENTS | |
|---|---|
| **PROCESS** | **DETERMINING INVENTORY AND STORED CAPACITY REQUIREMENTS** |
| DEFINITION | Setting up a system to determine and maintain the optimum quantities of material required for the business of the enterprise considering the existing conditions, such as production methods, product design, raw material specification, sales policies, and plant layout. |
| SYMPTOMS | ✓ Excessive amounts of money are tied up in raw materials and work-in-process or inventories of finished goods. This could be due to lack of information.<br>✓ There are frequent bottlenecks in production processes caused by raw material not being available.<br>✓ Materials kept in inventories tend to become obsolete.<br>✓ Inventory planning is based on a backorder report (A backorder is demand - immediate or past due - against an item whose current stock level is insufficient to satisfy demand.).<br>✓ The manager emphasises "buying" over "planning". Buyers make purchases; planners make strategic decisions to meet goals.<br>✓ All items in the inventory have the same inventory goal (This implies that all items are consumed in the same quantity at the same rate, which is never true).<br>✓ Past records indicate that inventory requirement decisions were often incorrect |
| **PROCESS** | **KEEPING STOCK** |
| DEFINITION | Developing records and ordering procedures that will assure adequate operating supplies with a minimum of inventory cost. Includes storage considerations. |
| SYMPTOMS | ✓ In-process inventory (work unfinished and still on the shop floor) is inappropriate by industry standards.<br>✓ The businesses finished stock inventories conflict with the market demand.<br>✓ The inventory levels frequently fluctuate.<br>✓ There high cost of excess inventory does not seem to be compensated by the savings generated due to economies of scale (bulk order). |
| **PROCESS** | **PURCHASING AND EXPEDITING** |
| DEFINITION | Improving ways of buying, expediting, record keeping, and supplier research to secure the required supplies and materials at the right quantity, quality, time and at minimum cost for the production process. |
| SYMPTOMS | ✓ Frequently face production delays due to material shortages or due to the poor quality of purchased materials.<br>✓ The quantity and cost of purchases is worse than that of the businesses' competitors.<br>✓ There are frequent delays of delivery from the supplier.<br><br>These symptoms may be caused by a lack of information about suppliers and channels and/or inadequate networking to build business alliances. |

*Source: Own work*

| PRODUCTION COMPETENCE >>>> CAPABILITY TO MEET TIME REQUIREMENTS | |
|---|---|
| **PROCESS** | **INTERNAL LOGISTICS** |
| DEFINITION | Internal logistics is one of the most important tasks within enterprises, particularly in medium and large manufacturing companies. It manages, arranges, plans and delivers materials, work in progress and finished products between plants. It includes all logistics activities and processes within the physical limits of an isolated company. |
| SYMPTOMS | ✓ Inputs/work in process pile up in from of work stations.<br>✓ There is idle staff and/or machines due to the lack of inputs/work in progress coming from other production plant.<br>✓ Wrong material/inputs arrive to the workstation. |
| **PROCESS** | **HANDLING MATERIALS** |
| DEFINITION | Developing the most effective means of moving raw materials, parts, tools, supplies, work in process, finished goods and other materials required to produce goods or services. |
| SYMPTOMS | ✓ Handling methods of material and equipment that allow the movement of the materials between operations and between destinations quickly are inadequate. There are high levels of in-process damage to the product or people.<br>✓ The production personnel frequently complain about the late arrival of stocks, parts, tools, supplies, and other materials caused by inadequate materials handling procedures.<br>✓ Stocks, parts, tools, supplies and other materials are not moved when necessary.<br><br>These symptoms suggest a lack of information and/or inadequate physical asset decisions needed to develop effective means to move material for production. |
| **PROCESS** | **FULFILLING FREIGHT OPERATIONS** |
| DEFINITION | Selecting and developing the most effective and efficient network of intermediaries for flow of goods, services, information and money. If the channel decision is part of the strategy, this task is about implementing the strategic decision. If not, the task still needs to be undertaken to establish a capability to have access to the markets. Not all channels of distribution are adequate for all products. Selecting appropriate channels will entail consequences for market coverage, efficiency and sales profit. |
| SYMPTOMS | ✓ There is no justification for excessive spending on freight compared to the competitors.<br>✓ Records show a high level of misdirected or lost shipments.<br>✓ There is inadequate use of freight forwarders. |

*Source: Own work*

***Table 39: Codification of the marketing competence***

| MARKETING COMPETENCE >>>> CAPABILITY TO COMMUNICATE | |
|---|---|
| **PROCESS** | **DEVELOPING A BRAND NAME** |
| DEFINITION | It refers to the development of a name, term, sign, symbol or design, or a combination of them intended to identify the goods and services of the enterprise and to differentiate them from those of competitors. |
| SYMPTOMS | ✓ The brand identity seems not to convey a clear message of what the business is all about.<br>✓ The brand identity is not implemented throughout the enterprise.<br>✓ The brand identity has not been upgraded for a long time.<br>✓ It seems that nobody in the enterprise has a clear idea of how to manage the brand identity.<br>✓ The development and management of the brand requires a large amount of resources and it is not clear what benefits it is bringing to the company.<br>✓ Despite investment in brand development sales and customer loyalty seem not to have increased.<br>✓ The brand seems not to generate an emotional link with potential buyers. |
| **PROCESS** | **ADVERTISEMENT AND PROMOTION** |
| DEFINITION | Determining the schedules, themes, layout, text and media of advertising, as well as sales competence and text, materials and demonstration equipment for a promotional programme. Includes determining the relative worth of different media for reaching specific groups in targeted markets or segments. |
| SYMPTOMS | ✓ The competitors put more and higher quality resources towards promotional programs.<br>✓ The present promotional programme of the business is not integrated.<br>✓ Promotional materials are inadequate, unprofessionally prepared and consist of an unclear message.<br>✓ Effort put towards advertising is not based on any rational calculation.<br>✓ The advertising message is unclear.<br>✓ Advertising is not reaching the target markets. |
| **PROCESS** | **PREPARING SALES MATERIAL** |
| DEFINITION | Preparing price lists, catalogues, technical papers, and instruction books for the buyers and dealers. |
| SYMPTOMS | ✓ The benefits of the products are either missing or are not clearly explained in the present sales material.<br>✓ The sales material does not seem to reach the target markets.<br>✓ Product information is not fully detailed. |

*Source: Own work*

| MARKETING COMPETENCE >>>> CAPABILITY TO DISTRIBUTE | |
|---|---|
| **PROCESS** | **SELECTION OF DISTRIBUTION CHANNELS/MODES OF ENTRY** |
| DEFINITION | Selecting and developing the most effective and efficient network of intermediaries for flow of goods, services, information and money. If the channel decision is part of the strategy, this task is about implementing the strategic decision. If not, the task still needs to be undertaken to establish a capability to have access to the markets. Not all channels of distribution are adequate for all products. Selecting appropriate channels will entail consequences for market coverage, efficiency and sales profit. |
| SYMPTOMS | ✓ The businesses successful competitors are using new channels that meet the target markets needs better.<br>✓ The flow of money, goods and information in the distribution channels both ways is chaotic or frequently blocked.<br>✓ The channel is ineffective and inefficient in reaching the target market. |
| **MARKETING COMPETENCE >>>> CAPABILITY TO OBTAIN ORDERS AND SECURE SALES CONTRACTS** | |
| **PROCESS** | **PROMPTING AND RESPONDING TO SALES INQUIRIES** |
| DEFINITION | |
| SYMPTOMS | ✓ The business does not seem to be taking advantage of all available means to solicit inquiries.<br>✓ Response to inquiries is inadequate or inappropriate.<br>✓ Standard procedures to monitor the process of prompting and responding sales inquiries do not exist or are not fully developed. |
| **PROCESS** | **PRICING AND QUOTING** |
| DEFINITION | Determining the final or negotiable selling price of goods or services and preparing quotations. |
| SYMPTOMS | ✓ Past records indicate that erroneous quotes have been made without reason.<br>✓ Prices quoted to buyers for similar offers fluctuate without reason.<br>✓ Pricing and quoting practices of competitors are better received by buyers. |
| **PROCESS** | **NEGOTIATING** |
| DEFINITION | Assuring that the products to be sold are clearly specified and their sales are negotiated in accordance with the business's policies and procedures. This is done in such a way as to enable all parties to have a clear understanding of the terms and secures favourable terms for the business. Detailed knowledge of national, international and company specific product features is required for preparing specifications and negotiations. |
| SYMPTOMS | ✓ Buyers gain advantage in negotiations due to their better understanding of the product specifications.<br>✓ Past business deals indicate that the consequences of the negotiated specifications are not accurately foreseen by the business.<br>✓ Quoted product specifications fluctuate without reason. |

*Source: Own work*

***Table 40: Codification of selected resource management capabilities***

| RESOURCE MANAGEMENT COMPETENCE COMPETENCE >>>> CAPABILITY TO ACQUIRE FINANCIAL RESOURCES | |
|---|---|
| **PROCESS** | **GETTING PAID** |
| DEFINITION | This process is about ensuring the business is able to collect its accounts receivable on time. |
| SYMPTOMS | ✓ It seems that invoices do not go out promptly and accurately.<br>✓ Invoices are returned due to errors (e.g. inaccurate description of the goods or services the customer purchased, incorrect pricing, etc.) or missed information (e.g. date when payment is due, penalties for late payment, early payment discounts, etc.).<br>✓ Invoices seem not to be sequentially numbered.<br>✓ Payment cycle seems to be longer than the industry average.<br>✓ The business does not track its customers' payment practices and history.<br>✓ The business does not seem to be in constant communication with its clients to ensure timely payment.<br>✓ The business has a percentage of unpaid bills that is higher than average.<br>✓ The business has not attempted to design a payment plan for those clients whose debts have not been honoured for a long time.<br>✓ The business does not seem to know what additional steps it can take to get paid once the customer refuses to discuss the issue or won't commit to a payment plan.<br>✓ The business seems to be struggling with exchange rate fluctuations that affect the business competitive position in international markets.<br>✓ The business is not able to determine which the most suitable payment mechanism is for international transactions.<br>✓ The business is not aware of existing mechanisms to hedge the risk of default. |
| **RESOURCE MANAGEMENT COMPETENCE COMPETENCE >>>> CAPABILITY TO IDENTIFY HUMAN RESOURCES** | |
| **PROCESS** | **IDENTIFYING WORK FORCE NEEDS** |
| DEFINITION | Managers need to develop ways to anticipate future staff needs. This process may include plans for upgrading, transfers, and recruitment to fill technical or managerial position. |
| SYMPTOMS | ✓ The number of employees on the payroll fluctuates considerably and frequently.<br>✓ The enterprise seems to fail in anticipating and planning work force requirements.<br>✓ The enterprise lacks substitute or qualified replacements for key jobs.<br>✓ The enterprise has too many or too few staff to run its operations.<br>✓ No one in the enterprise has the time, background, or ability to develop ways to anticipate future work force needs (i.e. plans for upgrading, transfers, and recruitment to fill vacancies).<br>✓ Recruitment of the enterprise does not seem to be based on any plan |

*Source: Own work*

| RESOURCE MANAGEMENT COMPETENCE COMPETENCE >>>> CAPABILITY YO ACQUIRE OF HUMAN RESOURCES | |
|---|---|
| **PROCESS** | **RECRUITING STAFF** |
| DEFINITION | This process relates to the identification and hiring of the best-qualified candidate to fill a technical or managerial position. |
| SYMPTOMS | ✓ Key employees seem incompetent.<br>✓ The enterprise has been searching for key employees unsuccessfully.<br>✓ The enterprise recognizes the need for key employees, but management members are either too busy or do not know how to conduct a search.<br>✓ The enterprise needs a key employee(s) but does not have efficient methods for carefully evaluating the candidate(s).<br>✓ The enterprise is adding new activities and does not seem to have qualified personnel to perform them.<br>✓ Recruitment records indicate favouritism and nepotism.<br>✓ No one in the enterprise has the time, background, or ability to locate and recommend the best-qualified candidate to fill a technical or managerial position. |
| **RESOURCE MANAGEMENT COMPETENCE COMPETENCE >>>> CAPABILITY TO INTERNALLY UPGRADE HUMAN RESOURCES** | |
| **PROCESS** | **DEVELOPING KNOWLEDGE COMPETENCY PLANS FOR PERSONNEL** |
| DEFINITION | Managers develop and execute programmes for purposes of allowing personnel to acquire knowledge, skills and attitudes to help them achieve enterprise and personal objectives, as well as to provide the enterprise with trained and capable management when needed. Managers should be able to track the development of critical knowledge and skills, and to allow for individuals to identify current levels of competence and to be better rewarded and recognized in terms of competence levels. |
| SYMPTOMS | ✓ Management or employees seem to have inadequate knowledge or skills.<br>✓ Management or employees seem to have improper attitudes or work habits.<br>✓ Office work is of inferior quality.<br>✓ New knowledge or skills seem needed but are not available.<br>✓ There is high employee turnover.<br>✓ The enterprise has difficulties in hiring people.<br>✓ The enterprise does not seem equipped to follow through on external consultant's recommendations or other external assistance.<br>✓ Present management personnel seem insufficient to meet present or future needs but the enterprise does not know what to do about it.<br>✓ There is excessive turnover of management personnel.<br>✓ Little or no management training is done in the enterprise.<br>✓ There is no plan for personal development and careers for the managers of the enterprise.<br>✓ Managers have little or no idea about their future positions in the enterprise.<br>✓ There is no planning about what type of managers would be needed in the future.<br>✓ Most managers seem to have added nothing to their knowledge and skills since their recruitment by the enterprise other than that which comes with experience. |

*Source: Own work*

# CHAPTER 8: THE MACHINE TOOL SECTOR

## 8.1 An overview of the European machine tool sector

The European machine tool industry is one of the most globally competitive sectors in the continent, and is characterized by its capacity to supply high-end products[26]. Europe is the world's largest manufacturer of machine tools, generating more than one third of the world's production and 52% of world exports -i.e. 79% of European machine tool production is exported[27]- (CECIMO, 2011). The European machine tool sector is known for being knowledge and technology intensive with medium-high R&D intensity (European Commission, 2013).

Although production is spread over several countries, the bulk of production is concentrated in traditionally strong industrial centres such as Southern Germany and Northern Italy which account for approximately two thirds of the total output (approx. 44% and 23% respectively). Other significant producers are: Switzerland (approx. 11%), Austria and the Basque country (approx. 4% each). Over the years the sector has developed regional specialization patterns[28] a consequence of the different growth patterns of end-user industries. These specialization patterns are the drivers of the high productivity and efficiency gains the sector enjoys today.

The competitive edge of the sector in global markets rests on five pillars:

i. The quality, performance, precision, productivity, and reliability of the products it takes to the market;
ii. The customers' recognition of the different European brands;
iii. The vast experience and know-how developed by the companies' staff;
iv. The enterprises' high level of technological readiness, that allows them to enhance the productivity of their own production process by adopting new technologies; and
v. The ability of producers to solve customer problems by offering application solutions consisting of a tailor made product and a service pack to assist clients with the set-up,

[26] According to CECIMO, the European association that represents the common interests of the machine tool industries at the EU level, nowadays machine tools are categorized not according to machine types, but based on the level of technology and customization. The market for high-end machines is remarkably different than the market for standard, low-cost machines (CECIMO, 2011).
[27] European machine tools are mainly exported to China which represents approximately one third of all exports, but also to the US, India, Russia, Japan, South Korea and Brazil. Intra-European trade is also significant.
[28] According to CECIMO Swiss and German suppliers are specialized in accurate production, Southern European suppliers in bigger and more traditional machine tool solutions, Germany, Italy and France in high customer-intimacy machines, and Northern Europe in flexible automated solutions, as well customer intimacy machines.

utilization, and maintenance of the product, rather than standard machines. The service content can be as high as 40% in some companies (CECIMO, 2011).

European producers attend a wide client base from many industrial sectors, such as automotive, aerospace, construction, medical and electronics. The characteristics of the market have led European producers to focus on a differentiation strategy that aims at developing new processes, products, and services which will help their customers increase their productivity, meet their precision needs, help them reduce their costs, and remain competitive in their respective markets. Competitiveness in global markets and long term survival for enterprises in the sector is determined by their ability to innovate and capitalize on knowledge-intensive, high value activities and services[29]. Consequently, costs are not one of the main determinants of the sector's international competitiveness, even though producers need to keep an eye on them to prevent losing ground to technologically strong competitors.

It is important to highlight that in the machine tool sector there are two drivers of innovation: a demand pull, and a technology push (Carlsson, 1984). The former usually results in incremental innovation aimed at meeting clients' requirements (Lissoni, 2001). This is achieved through a close collaboration with the client in order to design and manufacture tailored made machines (Olazarán *et al*., 2009). The latter is usually originated by specialized suppliers and cross fertilization from other sectors and science branches (Chen, 2009). While innovation in the machine tool sector has typically been focused on the technological improvement of individual machines, nowadays the sector is incorporating transversal innovation (e.g. nanotechnology, new materials, microelectronics, micro-systems technology, etc.) applied to its production (Gómez-Uranga *et al*, 2009). Given that codified scientific knowledge is driving changes at the level of the firms' production processes (Wengel and Shapira, 2004), enterprises need to improve their absorption capacity in order to be able to identify, understand, adapt, incorporate, and use such knowledge (Chen, 2009).

The European machine tool sector is dominated by family-owned highly flexible SMEs with fewer than 100 employees[30] and offering small-batch production of custom-built, highly specialized, high precision machines. These enterprises have proven to be very agile, flexible and adaptable

[29] Knowledge Intensive Service Activities (KISA) are developed internally by enterprises (e.g. product design, R&D, brand development, after sales service, user training, transport, maintenance, etc.), while Knowledge Intensive Business Services (KIBS) are purchased by the enterprise to third parties (e.g. IT, accounting, and legal services, management consulting, market research, advertisement, R&D, engineering services, etc.)

[30] Germany is the only large European producer of machine tools where it is possible to find predominantly medium and large companies with integrated production processes.

to respond quickly to customer demands and solve their problems in a unique manner. Due to their ability to adjust their production volumes and tailor the offer to the clients' needs, SMEs in the sector are naturally adapted to serve niche markets. A CECIMO (2011) study identified some disadvantages of SMEs acting in the machine tool sector, but that are common among the SME community independently of the sector in which they are active. These disadvantages are:

- Deficiencies of their human resources (e.g. lack of strategic and operational management competences and skills, concentration of decision-making power in one person with limited background to cover all important business competences, difficulty to attract and retain talent, lack human resources to manage a globally successful marketing activity, shortage of workforce and a gap between the skills needed and the skills available on the market, etc.);

- Financial challenges (e.g. low capitalization, cannot afford the internationalization of their operations and services network, insufficient budget for R&D activities, difficulties in accessing funds from financial institutions, impossibility to offer meaningful discounts, larger purchasing costs as a consequence of lower volumes procured, etc.)

- Inadequate resources and capabilities (e.g. difficulties to answer high volumes orders, lack of resources and capabilities to establish global customer services systems, difficulties to manage intellectual property, lack of cultural awareness and euro centrism prevent some SMEs from adapting to the business culture in important export markets, difficulties to manage their value chain, etc.)

As it happens with other types of investment goods that are at the beginning of the industrial supply chain, the machine tool sector is unsurprisingly cyclical and suffers from high volatility. During economic downturns end customers tend to postpone consumption, this in turn has an effect on the investment decisions (i.e. reductions in capital expenditures) of most companies that are the sector's clients. Furthermore, while being the first to suffer during economic crisis, the sector is also the last to recover as business confidence takes time to be restored, and the time lag between the reception of new orders and production changes is between six and nine months.

Despite this privileged position, the European supremacy in the machine tool sector has been challenged, and the aftermath of the latest economic downturn left European machine tools businesses facing a dramatically new business environment. This new environment is characterised by the emergence of Asian countries as global economic powers and their keen

interest in developing their local manufacturing base supported by a domestic machine tool industry. The shift in machine tool consumption to developing countries and the emergence of strong competitors in Asia posed a serious threat to the survival of many SMEs in the sector.

All these changes led small European machine tool manufacturers to reduce their size even further while larger players got even bigger. Furthermore, R&D and innovation rates also suffered as traditionally proximity to end-users drive the demand for new solutions. Renewed difficulties to access fresh funds, risk aversion on the part of clients, and significant cost pressures due to inflation in raw materials, intermediary components and energy prices, resulted in an increase in the rate of workforce loss of 20%. For a sector which is dependent on the knowledge and experience of its workforce, this is a major setback and a loss of critical assets for the firm.

The new business environment requires enterprises requires a transformation of the machine tool sector, and knowledge has a very important role to play in this transformation. Machine tool producers need to learn to use knowledge as a competitive and strategic asset (CECIMO, 2011). This requires:

- An efficient use of ICTs;
- The mastering of legal and contractual issues to protect their know-how as they increase their international presence;
- A focus on innovation and knowledge intensive value propositions;
- The creation of strategic alliances to respond to market challenges;
- The thorough understanding of foreign business cultures;
- The investment in equipping the workforce with the right knowledge and skills.

## 8.2 The machine tool sector in Spain and the Basque Country

### *Salient characteristics of the sector*

Spain is the third largest producer and exporter of machine tools in the European Union and holds the ninth place in the world. With approximately 69% of all enterprises, 86% of exports, and 84% of total machine tool production, the Basque Country is the engine that drives the sector. Over 90% of all enterprises in the Basque machine tool sector are small or micro enterprises. This atomization is the result of high specialization and division of labour along the value chain, and has led to very high levels of product diversification.

Like its European sibling, the Basque machine tool sector follows a strategy that seeks to reinforce the paradigm shift from efficiency as the pillar of competitiveness to innovation. The machine tool sector is one of the most competitive and dynamic sectors of the Basque economy, and plays a central role as a catalyst for growth of the aggregate regional economy. The high levels of effectiveness and efficiency achieved by its SMEs ensure high levels of productivity, quality, and overall competitiveness. SMEs in this sector are very sensitive to technology changes, and due to their highly innovative nature it pulls other auxiliary industries to become more competitive (e.g. nanotechnology, microelectronics, etc.).

While Spanish enterprises have similar characteristics and face most of the same challenges as their European counterparts, export intensity is much higher in the case of Spanish enterprises reaching 92% of total production[31]. Unlike the case of the European wide sector, in 2013 China was only the second export destination for Spanish machine tools with approximately 13% of all exports. Germany was the largest export market with approximately 18% of total exports, while exports to other European countries reached over 40% of all exports (AFM, 2013).

### *Institutional and policy environment*

The Machine Tool, Accessories, Component Parts and Tools Manufacturers' Association of Spain (AFM) was formed in 1946 and nowadays groups 90% of all enterprises in the sector, accounting for over 92% of total production, and 98% of total exports. The association provides enterprises with the needed support to internationalize their operations, conduct R&D, manage quality, security and environmental issues, conduct technical training, build alliances, and to maintain institutional relations with relevant stakeholders. AFM sponsored the creation of the machine tool research foundation INVEMA for the development of R&D activities with enterprises and sector specific technological centres.

As a way to help enterprises cope with the necessary adaptation and increase in international competitiveness, the Machine Tool Institute (IMH) at Elgoibar created in 1.986 to ensure enterprises had access to technically qualified personnel. Nowadays the IMH is a public training centre of the Basque Government under the Ikaslan Gipuzkoa network.

The Basque Government has implemented an active policy to help the private sector in general, and the industrial sector in particular, to adapt to the changing economic environment. Over

[31] In 2.013 total output of the Spanish machine tool sector surpassed €1,4 billion of which over €1,1 billion were exported.

the years there have been many plans launched to support the different industrial sectors of the Basque Country, some of those plans are: the Exceptional Re-launching Plan (PRE) of 1.985, the Investment Support Programme (PAI) of 1.988, and the 3-R Plan (Rescue, Restructuration, and Reorientation Plan) of 1.991. Despite some undesirable results, most of these programmes have been successful and have helped to improve the situation of the industrial sectors in the Basque Country.

In 1.991 the Basque Government established the Competitiveness Programme within the framework of the Industrial Policy 1.991-1.995. This programme led to the creation of nine priority clusters[32], one of them was the machine tool cluster that was formed in 1.992 after the signature of a collaboration agreement between the Basque Government and AFM. Clusters' most important activities were the strengthening and/or creation of cooperation links among enterprises, the promotion of joint R&D activities, the improvement of quality, and the boosting of internationalization activities (Aranguren *et al*., 2009; Porter *et al*., 2012).

Through the Science, Technology, and Innovation Plans (PCTI, 2001-2004 and PCTI, 2010) the Basque Government expresses its political commitment to boost innovation-led growth and strategic diversification based on R&D. An example of the industrial diversification strategies based on R&D is the Nanobasque Strategy (SPRI-Gobierno Vasco, 2008) whose aim is to contribute to diversification through the introduction and application of micro and nano technology in existing enterprises in traditional sectors, such as the machine tool sector.

## 8.3 Economic cycles affecting the machine tool sector

As mentioned earlier, the machine tool sector is highly vulnerable to economic cycles, which significantly impact in the way the sector is structured and the way it competes. In the last half century there was no shortage of global economic instability. The two oil crisis of the seventies left a mark in the sector that was still being felt in the early eighties. The economic downturn of the early nineties caused by the Gulf War, the crisis in the automotive sector, and the economic fall of Eastern Europe, generated the most severe recession in the European machine tool sector since the end of World War II. The world production and consumption of machine tools shrank by 8.5%, and by 1.994 the sector accumulated four years of continuous fall in production volumes. In Spain the situation was no different to that of other European countries. By 1.994 the machine tool sector in Spain had suffered a serious set-back with production and export

[32] Nowadays there are twelve clusters in the Basque Country.

levels 58% and 76% lower respectively when compared with data from the onset of the crisis in 1.990. During this period of three years 25% of the enterprises were forced to close and 30% of the work force was laid off (López Usoz, 1996).

By early 1.995 production levels started to increase, and the enterprises faced the problem of coping with demand increases that in some cases reached 10%. This change in the global economic outlook opened a period of six years of continuous growth in terms of production and export volumes[33], allowing for the enterprises' economic and financial recovery.

The period between 2.001 and 2.008 starts with an economic downturn and increase in uncertainty as a consequence of the terrorist attacks in New York, and ends with the burst of the subprime bubble in the United States. Despite what one could initially think, these eight years were generally good for the sector with the clear exception of the years 2.003 and 2.004 that saw production and export volumes fall. This decline had a particularly severe effect in the Basque Country that saw production volumes shrink by 10.4%, three percentage points above the rest of Spain. Towards the end of the period the economic outlook improved and the sector experienced a new growth cycle that had a particularly positive effect on exports.

As in the case of the European wide sector, the Spanish machine tool production peaked in 2008 with little over one billion euros of production[34] only to fall 30% and 15% on the following two year as a result of the economic meltdown. Not surprisingly, exports also fell by 25% and 12.3% in the years 2.009 and 2.010. Production levels have increased since 2010 but have not yet reached pre-crisis levels. A positive effect of this economic crisis is the focus on internationalization that businesses were forced to assume. Export intensity reached 92.2% from an original 74.1% at the beginning of the period. Another consequence of the 2008 crisis was the considerable reduction in domestic demand that did not recover with the passing of time. Data gathered by the AFM suggest that domestic sales in 2013 were only 22.7% of what they were in 2008.

## 8.4 Selected enterprises for the study

Three Gipuzkoan enterprises of the machine tool sector were selected for this study. For confidentiality reasons, the name of the enterprises and informants will not be revealed. Two

[33] In the case of Spain the year to year increase in production volumes between 1.996 and 2.000 was 37%, 23%, 17%, 18%, 7.5%, and 2.2%. The year to year variation in export volumes in the same period was 40%, 33%, 10.3%, 11%, -0.2%, and 1.4%.

[34] European wide production levels in 2008 reached over 24 billion euros (CECIMO, 2013).

of the enterprises (Enterprise A and Enterprise B) share similar characteristics and were selected to allow for literal replication. These two SMEs are highly innovative, have a strong presence in international markets, and have shown an impressive capability to overcome difficulties and remain profitable during economic crisis. They have also undergone an important strategic and operational evolution supported by the adequate development of their dynamic capabilities. Enterprise C is a much smaller company which, even though successful in many aspects, has not managed to reach the levels of internationalization and competitiveness of the other two. The most important descriptors of these three SMEs could be seen in the table below.

***Table 41: Three SMEs of the Basque machine tool sector***

| | **Enterprise A** | **Enterprise B** | **Enterprise C** |
|---|---|---|---|
| Year of incorporation | 1.973 | 1.928 | 1.957 |
| Headquarters | Azpeitia | Albiztur | Zarautz |
| Main activity | Design and assembly of automation solutions for various industrial sectors | Design and assembly of finishing equipment for the paper industry | Manufacturing of gears |
| No. of employees | 200 | 155 | 40 |
| Turnover | € 40 million | € 40 million | €3 million |
| Export intensity | 50% | 97% | 15% |
| Year of first export | 1.982 | 1.981 | 1.975 |
| FDI | Yes | Yes | No |

*Source: Own work*

# CHAPTER 9: ENTERPRISE A

## 9.1 The origin and growth of Enterprise A

Enterprise A[35] was established in 1.973 by Julián L. and Tomás L.[36] who, after gaining technical experience working in a furniture factory, decided to create an enterprise devoted to the design and production of equipment for the automation of production systems in wood-transforming enterprises. The company was created in the Urola River Valley, an area characterized by its high concentration of furniture factories which were the initial natural clients of the newly created Enterprise A. These clients subcontracted the production of components and simple equipment to Enterprise A. Its main assets were the technical know-how of its founders and the ability to design and produce equipment to simplify and automate manufacturing tasks that until then were being performed manually.

Soon after starting operations Enterprise A had to face the challenge posed by the oil crisis of the 1.970s and 1.980s which seriously affected industrial production and caused the closure of many enterprises, including some of Enterprise A's clients in the wood-transforming and furniture sector. Enterprise A's response to the crisis was to diversify, and in 1.982 it started targeting the automotive and home electrical appliances industry by designing and producing automation systems for metal-transformation. This change was much more important than a simple market diversification exercise, as it changed the way the company defined itself. It was the first step in Enterprise A's mutation from a manufacturing company focused on its products, into a service company focused on the application of its unique technical knowledge. This strategic shift required important operational changes such as the incorporation of new technologies, the adaptation of its production equipment, and most importantly of all, the recruitment of specialized personnel to perform the new routines and processes.

Diversification not only implied penetration into new sectors, but also into new geographical markets. Enterprise A's management understood that while being active in a sector that is very sensitive to economic fluctuations, it was also true that the technical know-how required to compete in the market represented an entry barrier that provided Enterprise A some level of protection against competitors. Therefore, the internationalization of the business were seen more as an opportunity than a threat.

In 1.982 Enterprise A conducted its first export transaction. Soon after Enterprise A starts growing strongly in two markets: Europe and Latin America, particularly Brazil. The reasons why

[35] This section has benefited from the work done by Andonegi *et al*. (2004).
[36] The last name of the funders will remain anonymous for confidentiality reasons.

the company targeted and grew in these markets are not the result of a well-thought complex internationalization strategy. The company's headquarters were located 60 km away from the Spanish-French border, making France the physically and psychically closest market to target. Expansion in Latin America can be explained by the fact that the person in charge of conducting marketing operations for the company only spoke Spanish and Portuguese, the two major languages spoken in Latin America. Enterprise A's internationalization further increased, and its geographic scope widened, when its clients started internationalizing their production activities. As they opened production sites outside their home country, they started demanding their international plants to be equipped with the same technology they had in their national production plants. On those years Enterprise A started participating in national and international trade fairs where the company realized that in order to enter certain markets it was necessary to build a network of sales agents.

With time, Enterprise A's offer gained in complexity and clients started requesting the company to produce more sophisticated equipment. As a consequence of the need for growth embedded in the new corporate strategy, the company added eight new capitalist partners to afford the investments required. The new partners were former employees of the company who were perfectly acquainted with Enterprise A's strategy, culture, and objectives, making the transition relatively easy. Despite the economic instability of those years that led to the disappearance of many of Enterprise A's clients, suppliers, and competitors, the business managed to consolidate thanks to a sustained increase in sales and a moderate increase in the workforce.

A decade later, in the mid-1.990s, and also responding to the need for growth, Enterprise A moves its operations to a new 8.000 square meters plant in Azpeitia. In those years Enterprise A focused more and more on the engineering of the offer (i.e. design, assembling, installation, maintenance, etc.) rather than on the manufacturing of its components, which was increasingly being subcontracted to reliable suppliers. The main objective was to concentrate on adding value to the offer though innovation, investment in R&D, and the development of patents, while leaving the less value-adding activities to a network of partner enterprises. Another important qualitative change of the nineties was the decision of the founders to withdraw themselves from the day to day management of the business and hire qualified outside professionals to do it.

The professionalization of the management led to the reorganization of the business in divisions and departments. Enterprise A organized itself in three divisions with the intention of offering specialized services and developing specific automation solutions for each industrial activity where its clients were active. Each division was endowed with dedicated personnel in the R&D

and technical departments. This structure is still in place today and it enables Enterprise A to offer all-round technological solutions for all sectors of industry. The three divisions are:

1. *Enterprise A Wood* - This division represents the core business that initiated the company, it is nowadays the undisputable leader in the Spanish market, and the largest division in terms of sales. This division is specialized in the design and manufacturing of automation solutions for industrial wood processes; from the initial manufacturing process of panels and boards and their subsequent processing or coating, to the final manufacturing stage of doors, parquet or furniture.

2. *Enterprise A Metal* – This division is specialized in the design and manufacturing of automation solutions for the transformation and manipulation of metal veneers and metal panels, both cold and hot rolled steel, aluminium, stainless steel and other metals. The division also designs and manufactures automation solutions for a wide range of industrial processes involving the handling and processing of metal products of all types. Its clients come from various sectors such as automotive, iron and steel, and home electrical appliances among others.

3. *Enterprise A Industrial* - This division was the last one to be incorporated and it caters for the needs of a wide range of clients coming from the construction materials, food, or textile sectors. The division is specialized in the design and manufacturing of equipment and lines for automating production in a wide range of industrial sectors. Its aim is to provide complete solutions from raw material processing to packaging, palletizing and storage of the products.

In the late 1.990s the internationalization of the business took new impetus with the successful penetration of the British market. This move resulted from the close relationship that the company's Director had with the person who would later became Enterprise A's sales agent in the country. This agent took care of the sales representation in the United Kingdom and the Scandinavian countries. As the portfolio of clients increased, the challenge was to provide adequate after sales services to them. To address this issue, Enterprise A decided to create Enterprise A UK Ltd., a subsidiary company in the United Kingdom in charge of conducting marketing activities and providing technical assistance to clients in Great Britain, Ireland, and the Scandinavian countries. The subsidiary generated good business opportunities for Enterprise A, but as Enterprise A's offer became less standard and more complex, the British subsidiary lost its ability to provide the type of support services needed by the clients. As a

consequence of this, together with the strengthening of Enterprise A's ability to provide after sales service by using new technologies, Enterprise A UK Ltd. was closed in 2.008. Nowadays the European market, which Enterprise A considers its domestic market, is serviced from the headquarters office in Azpeitia.

Despite closing the British subsidiary, the learning experience was very positive and it led to the recent opening of a subsidiary in the United States to provide maintenance and repair services to its clients in North America (i.e. U.S.A., Canada, and Mexico), and to help Enterprise A in the identification of potential partners in the region. Enterprise A is analysing the opening of similar subsidiaries in Latin America and Asia. For other markets, the company uses a network of partner enterprises or specialized professionals to provide after sales services to its clients.

To identify business opportunities in countries other than the three North American countries, Enterprise A uses a network of sales agents that allows for the identification of potential clients without the need to support an expensive administrative structure. Once an opportunity is identified a marketing professional from Enterprise A contacts the potential client to design the offer and close the deal.

In 2.009 Enterprise A acquired Enterprise M, a company founded in 1.851 and specialized in the design, manufacturing and installation of hydraulic presses for the industrial sector and machinery for the wine sector[37]. Thanks to that strategic move, Enterprise A incorporated to its skills-set Enterprise M's experience in hydraulic technology, allowing the company to include the design, manufacture and installation of large industrial presses, handling and lifting equipment, thus providing completely integrated turnkey solutions that ensure maximum operational efficiency of production processes. Furthermore, the incorporation of Enterprise M's production plant allowed Enterprise A to increase the number of orders it could handle.

Today, over four decades after being established, its more than two hundred employees (of which more than 55% are engineering professionals) make Enterprise A the leader in the Spanish market of industrial process automation systems for wood-transforming enterprises, and a very important player in the market of metal-transformation. Enterprise A is well established in

[37] The acquisition of Enterprise M was triggered by Enterprise M's bad economic results that were forcing the company to close. Enterprise M was Enterprise A's most important supplier of hydraulic presses, and even though there were other suppliers, the quality, customization, and reliability levels reached by Enterprise M could not be matched. The closure of Enterprise M and the loss of its knowledge and expertise would have had a strong impact on the quality of Enterprise A's offer. In order to prevent this from happening Enterprise A acquired and restructured Enterprise M. Nowadays Enterprise M is a profitable small company with a turnover of approximately € 8 million and a large portfolio of clients.

international markets with clients in more than fifty countries where it ships approximately 50% of its production. Is main export markets are the U.S.A., Latin America (i.e. Brazil and Chile), the European Community (i.e. the United Kingdom, Germany, Austria, Poland, and France) and Russia. Enterprise A started as a small workshop for the production of equipment targeting local furniture factories, and with time it managed to transform itself into an engineering company with sales of approximately € 40 million per annum. The company produces its own designs and is fully devoted to find solutions for all its clients' production problems with high quality, innovative, flexible and adaptable solutions. Enterprise A's management clearly understands that the company's growth is based on and limited by the business ability to successfully incorporate, train, and retain personnel with the right combination of knowledge and skills.

## 9.2 An assessment pf Enterprise A's competences and capabilities

### 9.2.1 Enterprise A's resource management competence

In terms of resource management, the strategy set by Enterprise A is intensive in the use of knowledge and information as that is the key input for its R&D and innovation efforts. This section will place special emphasis on the activities the business undertakes to manage knowledge, and how the management of other resources affects the business knowledge base.

***Knowledge for strategic decisions***

Incorporating **clients in the design process** is a very ingenious way of making clients become partners in shaping Enterprise A's future. Not only that, but it also offers a unique window to gather information that goes beyond product specifications and help Enterprise A understand clients' perceptions and degree of satisfaction with the offer and the company, their expectations *vis-à-vis* the evolution of the company and its offer, their intended future strategic and operational moves, and their assessment of competition. All these constitute valuable information that has enormous impact in the way Enterprise A shapes its strategy and drives its capability development efforts, including R&D priorities. Since communication is a two-way street, clients' participating in the design work also allows Enterprise A to convey information to its clients about its latest developments, updates and upgrades of existing equipment, and new service offers.

Business opportunities are identified through the **network of sales agents** around the world and the **headquarters marketing team**. Enterprise A has a dedicated team with geographical specialization capable of monitoring general industry trends, as well as the specific strategic and

operational moves of its clients. This infrastructure allows Enterprise A to identify business opportunities and to have a clear understanding of where the market may evolve in the near future.

Due to the critical role that knowledge and know-how have for the future of the company, Enterprise A makes extensive use of patents in an attempt to protect its intellectual property and the outcomes of its R&D investments.

The maturity-based diagnostic tool of chapter seven helped the researcher to assess and put a numerical value to Enterprise A's ability to manage knowledge for strategic purposes, and to highlight critical improvement areas.

***Figure 11: Assessment of Enterprise A's knowledge management for strategic purposes***


*Source: Own work*

***Other initiatives affecting the management of knowledge***

Envisaging future needs, Enterprise A tries to incorporate new personnel every year, with the only requirement that the newcomers have completed university studies or have solid technical training. Requiring this minimum education level reduces the time to go through the learning curve and favours the adaptation and flexibility of the newcomer. For the hiring of junior staff the company has established **partnership agreements with universities and technical training centres**, allowing their students to have internships at Enterprise A.

**Training** at Enterprise A is done on-site. It is very important that the newcomers develop practical experience on the way Enterprise A works soon after their arrival to the company, and to achieve this they are assigned to a team where they will learn from the experts. This **mentoring programme** is critical to promote informal interchange of tacit knowledge and expertise, and to prepare the newcomer to become a functional member of the company. Other than to train newcomers in the normal day-to-day tasks and activities, mentors also help mentees understand and adapt to the corporate culture, which shortens their adaptation period.

Enterprise A has developed a **competencies plan** for its employees by which project leaders and area managers track the development of critical knowledge and skills of the employees under their supervision. Independently of their qualifications, newcomers are sent for a period of six months to work at the assembly plant as it is considered to be the best way to ensure they understand how the company functions. Furthermore, they are required to rotate between different projects in order to acquire broad knowledge of the company and to develop multiple skills that will later enhance their adaptability and autonomy. Enterprise A is fully aware that the knowledge that resides in the brains of its employees and is embedded in its business processes is critical for its future evolution. For that reason, the company takes the time to build the knowledge and skills of every employee in such a way that they all contribute to the existing **organizational competency framework**.

In order to motivate employees and secure the business' stock of critical knowledge, Enterprise A follows a **promotion policy** by which vacant post are filled as much as possible with internal candidates. This has helped to retain experienced and valuable professionals that are the key to the evolution of Enterprise A's offer and to cope with market challenges. When no internal candidate fulfils the requirements for the post, external candidates are selected. This is the case of some of the marketing employees.

Enterprise A has developed an **intranet** where employees can find all relevant information they need about the company and their specific activities, and that also includes an **expert locator**. This tool enables effective and efficient use and/or share of existing knowledge by allowing project leaders, middle management, and employees to connect people with particular knowledge or skills. It is very useful in the cases where an innovative offer is taken to the market and it is necessary to build new teams with specific experience and expertise.

Once a project is finished, the project leader meets with Enterprise A's Management Council to debrief management on the delivery of the project, lessons learned, and potential improvements for future projects. Similar **after action reviews** take place with Enterprise A's technical teams, and particularly with other project leaders. These meetings tend to be more technical and go much more in detail on the problems faced and the solutions identified at all stages of the project, from the design, to the production, the assembly, and the set-up at the client's premises. This way Enterprise A ensures that the knowledge created as part of a project is transmitted to other relevant employees for them to improve the way they perform their duties. These meetings are particularly important in the cases where Enterprise A is developing new or more complex systems and new knowledge is being created while implementing the project.

***Knowledge management enablers***

Technology is an important enabler to knowledge management, and Enterprise A makes extensive use of ICTs to manage information within the company. The company uses an **enterprise resource planning** system for its administrative tasks such as accounting, billing, payroll, etc., as well as for the planning and control of projects (i.e. materials list, work-loads, etc.). Furthermore, Enterprise A has developed an **intranet** for its employees as well as an **extranet** for suppliers, and has engineered a system for the **automation of data capturing** at the production floor to improve the monitoring of projects.

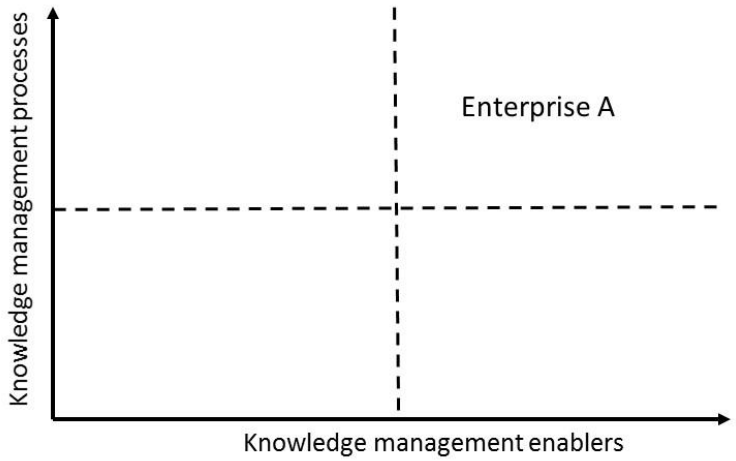
Enterprise A also works towards the development of a conducive corporate culture where good working relations prevail, and social activities are undertaken (e.g. dinners, company's day, support to local sport events, etc.) in order to allow employees' families and society in general to get to know the company. All these efforts have paid off, and one tangible result is the low employee turnover.

***Assessment of Enterprise A's knowledge management capability***

Enterprise A's Managing Director expressed high levels of satisfaction with the knowledge and information available to make strategic and operational decisions, and highlighted the key role played by knowledge in the development of critical capabilities. Evidence shows that Enterprise A's knowledge management capability has reached highest levels of development with well-thought and well-designed processes and initiatives, as well as a supportive environment with adequate enablers. Unarguably, Enterprise A can be placed in the top right quadrant of the

knowledge management maturity graph, signifying that it has achieved the highest stage of knowledge development (i.e. know-why as per the expertise ladder presented in chapter three).

***Figure 12: Maturity of Enterprise A's knowledge management capability***




*Source: Own work*

### 9.2.2 Enterprise A's strategic competence

Clearly Enterprise A's strategic competence is well developed. The first important strategic mutation occurred in the early eighties when the furniture industry was going through an important crisis and many of Enterprise A's client's disappeared. Instead of focusing on the product (i.e. equipment for the furniture sector), Enterprise A focused on its capabilities (i.e. to produce tailor made automation systems) and identified a profitable business opportunity supplying automation systems for the automotive industry. This strategic shift gave birth first to Enterprise A's metal division and later to its industrial division.

A company's strategic capabilities could be categorized in three groups: those responsible of defining the business strategy, those in charge of determining the optimum organizational structure, and those in charge of innovating and dynamizing existing capabilities.

Enterprise A's strategic competence is without a doubt well developed in terms of its capabilities to define a business strategy as the company has been able to clearly and unambiguously answer the three most important questions any business strategy should answer: 1. *What is the offer of the business?*, 2. *For whom is that offer intended?*, and 3. *What are the differentiation parameters that would make the clients buy from the company and not from competitors?*.

Enterprise A is an example of an enterprise that sells an offer that exceeds the physical product it manufactures. Enterprise A produces machines that are used to automate production processes, but it sells high technology automation solutions for all the production-related problems of its clients. This distinction goes far beyond the simple semantics as it requires the product (i.e. the machines for automation of production processes) to be coupled with a basket of high value services (e.g. R&D, design, setting up, maintenance, etc.) that complete the offer. Enterprise A's clients are large industrial corporations of various sectors in need of tailor-made automated production systems that ensure the reliability and consistent effectiveness and efficiency of their production processes.

Using the typology of business strategies presented in chapter five it is possible to determine that Enterprise A's strategic positioning represents a complex strategy based on two production dimensions, the *attributes* and the *quality* of the offer. This is not to say that the remaining positioning dimensions are not relevant for Enterprise A, but that these are the positioning dimensions that are critical for the success of the strategy. This positioning strategy, and the development of capabilities to achieve this strategic positioning, has allowed Enterprise A to develop high levels of bargaining power *vis-à-vis* its clients. Each client is treated independently and each offer is crafted together with the client, therefore once negotiations have started with a client, the likelihood of closing the business deal is very high as due to the high customization the availability of substitute products is not very high. Additionally, given the characteristics of the offer, it would be very time consuming for a potential client to simultaneously open discussions with more than one firm.

Enterprise A operates in a wide and heterogeneous market which requires high levels of flexibility from the enterprise in order to adapt to clients' demands and market shocks. Enterprise A's competitors are many and very different. Enterprise A is a strange company, and there is no other enterprise whose focus is strictly on the automation of production systems, and that it is active in as many different sectors as Enterprise A. Enterprise A's origins are rooted in automation, and through automation it has been able to develop equipment for different markets. Enterprise A's competitors are manufacturers of equipment for specific sectors that have taken on the challenge of automating their equipment. Consequently, Enterprise A's competitors change with each project and within each sub-sector where Enterprise A is active (e.g. in the wood sector Enterprise A competes with different enterprises depending on whether the system that needs to be developed is aimed at painting wood, or at polishing wood, or at producing plywood panels). Since Enterprise A is active in many sectors, those competitors

active in one sector are not active in the other sectors. In terms of the geographical distribution of its competitors, Enterprise A usually competes with German and Central European companies, but also with a large array of local enterprise in the United States and Asia.

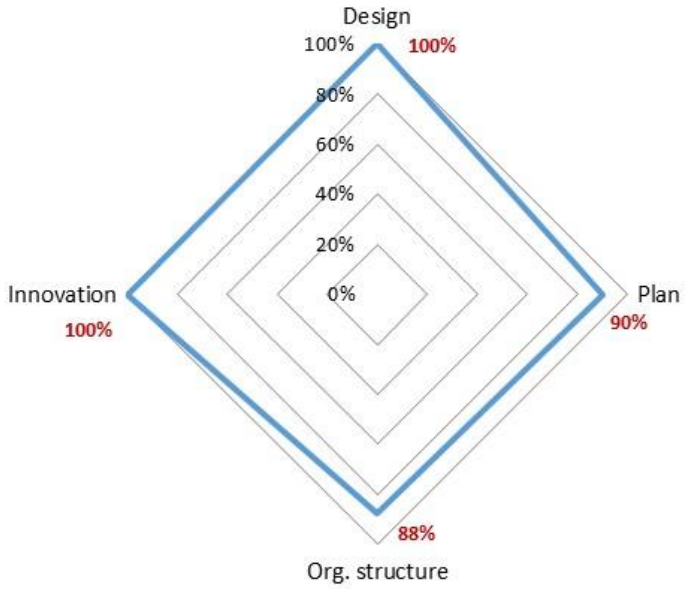
In order to accommodate for the necessary flexibility that a company like Enterprise A requires, the company has organized itself in such a way as to allow some degree of specialization while remaining capable of dealing with a wide range of different projects. As previously mentioned, Enterprise A is structurally organized in three divisions (i.e. Wood, Metal, and Industrial), but in practice Enterprise A's structure is very flexible. Its production is organized by independent projects, it uses ad-hoc multidisciplinary teams adapted to the size and complexity of each order, and it allows key professionals to simultaneously work in various projects if needed.

The third group of strategic capabilities are those related to the ability of the firm to innovate and to bring new dynamism to its existing capabilities. This capability is closely related to knowledge management practices, as they are an inherent part of innovation. Moreover, innovation is all about sharing, applying, and creating new knowledge. Due to the positioning strategy selected by Enterprise A (i.e. the ability to provide innovative, high-tech solutions to its clients' needs), innovation is certainly one of the most important capabilities of the business. Acknowledging this fact, Enterprise A has invested heavily in R&D, assigning three full time staff and devoting an equivalent of 3% of annual sales to the task. A tangible result of these effort is the number of patents developed by enterprise. In recognition for its continuous development of innovative technological solutions Enterprise A was awarded the prize of the best Industrial SME of Gipuzkoa in the year 2.004.

Close contact with clients also helps Enterprise A obtain valuable information to keep the enterprise aware of market and technological developments. In an effort to always be ahead of competition and provide a better service to its clients, Enterprise A uses this information to identify and predict technological and market changes with the aim of identifying potential opportunities in the near future. Once these opportunities are identified, the R&D team works to transform the technological development and/or predicted market change into a viable offer for the client. Example of this is the identification in 2.003 of the tendency of car manufacturers to use aluminium instead of iron, which led to an improvement of the business' production capabilities with the development of a vacuum stacker that used vacuum technology to replace magnets in the existing stackers.

The use of the strategic competence diagnostic tool presented in chapter seven, only confirms the previous analysis that Enterprise A's strategic competence is well developed without some capabilities being particularly stronger than the others.

***Figure 13: Assessment of Enterprise A's strategic competence***




*Source: Own work*

Enterprise A excels in all strategic capabilities, particularly in the capabilities to design a business strategy and to innovate and dynamize the business capabilities. The company has successfully evolved from a workshop providing repair services and manufacturing of relatively simple production equipment for the wood-transforming industry, into a high-tech knowledge-based company that designs and manufactures automated solutions for the production-related needs of its clients in various industrial sectors. In over four decades, Enterprise A went from being a micro enterprise with a strong focus on manufacturing, to a large SME centred in R&D and innovation for the provision of high value added services.

This well-developed strategic competence has allowed Enterprise A to conceive a flexible organizational structure and avoid being trapped in the structural inertia (Hannan and Freeman, 1984; Gresov *et al*., 1993; Ruef, 1997; Hannan *et al*., 2004) that undermines the survival chances of many companies. Institutional inertia is usually associated with path-dependency.

### 9.2.3 Enterprise A's marketing competence

Discussions with the Managing Director made it clear that the internationalization strategy of the business had an important effect on this competence, although it did not affect equally all the constituting capabilities. While the capabilities to communicate and to distribute were not affected, the capability to prompt clients and secure sales orders required substantial changes.

***Capability to communicate***

Communication is all about transferring information to help current and potential clients understand the company and its offer. The business' capability to communicate is shaped by three important processes that allow the company to convey its message to current and potential clients.

- *Developing a brand name;*
- *Advertisement and promotion;*
- *Preparing sales material.*

Enterprise A has managed to develop a recognizable corporate image that is adequately incorporated in all of its marketing material (e.g. corporate brochures) and displayed as part of the trade fairs where it participates. This corporate image manages to convey, with the help of well-selected visual aids (i.e. pictures, colour pallet, and logo) the unique differentiation factors of the company and the key attributes of the offer.

Enterprise A makes very good use of ICTs to send its message to existing and potential clients. The company has an updated, well designed, and informative web page in six languages (English, Spanish, German, French, Portuguese, and Euskara). In there, clients can find a complete description of Enterprise A's structure and its offer, including an exhaustive explanation of the equipment they produce and services they provide. In the web page, visitors can find videos, pictures, and news about the company.

The company uses social media (i.e. LinkedIn) and free-of-charge internet sites such as SlideShare[38] and ISSUU[39] to present the business and display its offer through videos, brochures, and pictures. Enterprise A also has its own YouTube channel where numerous videos of the

[38] SlideShare is a Web 2.0 based slide hosting service where users can upload files privately or publicly in various formats.
[39] ISSUU is a free digital publishing site.

company could be found in English and Spanish. Through news feed Enterprise A keeps its clients updated on the company's latest developments.

***Capability to obtain orders and secure sales contracts***

This capability refers to the business ability to answer enquiries and initiate contact with prospective buyers, to ensure the offer made to the client is clearly specified, to negotiate in accordance with the business' policies and procedures, and to determine the final or tentative selling price of the offer. It is through the development of three important processes that the company develops this capability:

- *Prompting and responding to sales inquiries;*
- *Pricing and quoting;*
- *Negotiating.*

Enterprise A's marketing department has dedicated personnel assigned to the domestic market, and to the different geographic areas where the company is active. These employees are in charge of maintaining an open and fluid communication channel with clients with the objective of understanding their needs and identify potential new business opportunities. For priority markets abroad, Enterprise A has developed a network of external sales agents that work in exclusivity for the company with two main responsibilities: to identify new business opportunities and to assume the representation of the company in the country. The agenda of the sales agents is determined in part by the marketing team at headquarters. Sales agents have no authority to negotiate orders.

In order to further consolidate the company's presence in markets where it is already established, to show its latest innovations, to reach target clients, and to generate sales enquiries, Enterprise A makes extensive use of trade fairs and exhibitions. In the year 2.014 Enterprise A has participated in the most important events of each of the sectors where is active: FIMMA 2014 (Spain), XYLEXPO 2014 (Italy), FOMÓBILE (Brazil), IWF (Atlanta, USA), and LESDREVMASH (Russia) for the wood transforming and furniture sectors; and EUROBLECH (Germany) for the metal transformation sector.

When it comes to the negotiation of sales orders, a member of the marketing department builds and leads a pre-project team composed of technicians and engineers. By doing this, Enterprise A is able to bring together critical technical tacit knowledge that is spread across the organization for the purpose of generating new business. The pre-project team identifies the needs of the

client, designs a concept solution, and prepares the technical presentation. Due to the complexity of the offer that Enterprise A takes to the market, negotiations tend to be very long. The negotiation for a simple order may take two months, a complex one may take up to one year before the contract is signed. For large projects the client usually imposes a first filter where certain parameters such as minimum technical requirements, price boundaries, etc. are being set and only those firms that can comply with them are taken to the next stage of negotiations. This is followed by one or more technical presentations, after which the client decides to which company it will assign the contract. At this point negotiations aimed at securing the order conclude, but this is also the starting point for technical negotiations aimed at determining the technical design of the offer, its final price, and all other relevant characteristics of the offer. These second round of negotiations is led by a different, more technical, team.

In most of the cases, the reason why the client choses Enterprise A is not associated with the price the company can offer. Given the complexity and the technology embedded in the offer, Enterprise A's positioning strategy is never on prices, but on the attributes of the offer and what the offer can do for the client. Factors such as productivity of the equipment, the quality of the HR that will be used to design and manufacture the systems, etc., are key selling points when it comes to secure a sales order. For highly standardized automation systems the price factor gains relevance, when the client is trying to identify the best way to automate the manufacturing of a new product, factors other than price are the clients' tipping points. Enterprise A has managed to develop a loyal consumer base. Once a company becomes a client, it is very likely that it will trust Enterprise A for its future needs in terms of automation.

***Capability to distribute***

This capability consists in the selection and development of the most effective and efficient network of intermediaries to facilitate the flow of goods, services, information and money. Because of the nature of Enterprise A's offer, the company has had no need to develop such a network to market its offer. Although Enterprise A conducts international transactions with the assistance of a network of sales agents, the company does not have distributors, nor licensing or franchising agreements with third parties. Certain components of Enterprise A's offer (i.e. the remote monitoring and maintenance service) are distributed through the internet with the help of ICTs.

### 9.2.4 Enterprise A's production competence

Enterprise A's Managing Director confirmed that production operations destined to domestic and international markets were identical, as it could not be otherwise given that the offer is the same irrespective of the country where the client resides. Based on Enterprise A's strategy one would expect that the company excels in at least two capabilities, the capability to produce an offer with the desired attributes and the capability to produce at the desired quality. Other production-related capabilities are important in as much as they contribute to the effective and efficient functioning of the production function, but they are not critical for the success of the business. This section will focus primarily on the two aforementioned capabilities.

***Capability to produce with the desired attributes***

As explained by the model of chapter five, the capability to produce an offer that meets all the attributes required by the client is one of the most important capabilities, and the only dynamic capability within the business' production competence. Enterprise A makes extensive use of this capability, to the point that it has made it the key differentiation factor *vis-à-vis* its competitors.

Three processes are critical for the business to be able to manufacture a product that meets the desired physical and functional attributes demanded by the client and agreed during the two phases of the negotiation process. These processes are:

- *New product design and prototyping;*
- *Product alteration and enhancement;*
- *Product discontinuation.*

Given the nature of Enterprise A's operations (i.e.: fully customized product and project-based production system), there is no mass production, therefore no need for the business to have a process related to the discontinuation of the product.

One of the Enterprise A's strategic positioning dimensions is ensuring that its offer meets the attributes demanded by the client. In order to guarantee that, the company places utmost importance on the participation of the client during the design phase in order to ensure they make intensive use of the clients' knowledge. Enterprise A is fully aware that they do not know nor understand the clients' product as well as the clients themselves, and that only through the interaction with them Enterprise A will be able to design an automated production system that fully complies with clients' specifications and expectations.

Given the nature of the offer (i.e. high degree of customization) and the will of the company to be flexible enough to accommodate all requests coming from the client, it is very common that the product design needs to be changed once the production and/or assembly of the final product has started. In these circumstances Enterprise A's design team works closely with the client to find an innovative way to accommodate the new requirements while trying to minimize the changes to the work that has already been performed.

Enterprise A also devotes resources to monitor and anticipate market and technological changes with the aim of adapting and enhancing its offer and remain one step ahead of competition. The physical equipment that Enterprise A produces is composed, to a large extent, of standard multi-purpose modules. To the continuous improvement of these modules, Enterprise A devotes considerable efforts. Two examples of this forward looking thinking are: 1. the adaptation of equipment to the use of plywood instead of solid wood to produce furniture; and 2. the development of furniture manufacturing lines that meet the requirements of large furniture produces (e.g. IKEA, Leroy Merlin and AKI) that needed a fully automated process from cutting to packing. In order to always improve its products, Enterprise A has incorporated in its machines a monitoring system via internet, aimed at collecting information about the equipment's performance and the problems it has during their life. This information is used by the R&D and the design teams to improve the effectiveness and efficiency of the equipment, and to engineer new and better solutions for the clients.

***Capability to produce at the desired quality***

Quality is one of the positioning dimensions of Enterprise A's offer. Therefore, and as it could not have been otherwise in a successful enterprise such as Enterprise A, the capability to produce at the desired quality is well developed within the company. Enterprise A sees quality management in a holistic and integrated manner, and with the assistance of Euskalit[40] follows the EFQM[41] model to improve its quality management with the aim of advancing towards total quality excellence.

The model presented in chapter five suggests three important processes that are the pillars of this capability:

[40] Euskalit, the Basque Foundation for Excellence, is a private, not-for-profit organization whose mission is to promote improvement and innovation in management throughout Basque society, with the end goal of contributing to the competitiveness and sustainable development of the Basque Country.
[41] European Foundation for Quality Management.

- *Development of quality standards*;
- *Development and implementation of quality control procedures*; and
- *Design of after sales service departments*.

In terms of the adoption of quality standards, the company has been certified in ISO 9001:2000 and ISO 14001. The need to implement these norms and obtain the certification originated simultaneously from two sides. There was an external factor driving the adoption of international certifications as Enterprise A's clients are world leaders in their respective businesses, and the application of well-known norms such as the ISO 9001 served to reassure clients of Enterprise A's commitment to quality. There was also an internal driver given by the acknowledgement by management that quality was one of the pillars that supported the business strategy and that they should devote extra efforts to ensure maximum quality in everything they do. This last consideration led to the adoption of the ISO 14001 on environmental management even though Enterprise A's activities have very little environmental impact (i.e. Enterprise A designs and assembles machines while subcontracts the actual manufacturing of a large portion of the equipment that constitutes its offer).

When it comes to the implementation of quality control procedures Enterprise A believes that the best guarantee of success for any process is to have complete control over all of its stages, from beginning to end. Given that Enterprise A's operations are organized around projects that are unique and distinct from each other, and that the complete elimination of defects is virtually impossible, the company takes control of everything, from the design and manufacture to the assembly, set-up and maintenance of the industrial installation to minimize their occurrence. Enterprise A has established rigorous quality-oriented methodologies such as 5S[42], it has established exhaustive control checkpoints in critical stages of the processes, and requires workers involvement with the aim of achieving the zero deficiencies goal. In order to minimize and learn from previous mistakes, and to avoid unnecessary waste of time and resources, assembly workers (who are the last link in the production process and have to correct all mistakes made in previous stages of production) are invited to actively participate in the initial stages of a project. This focus of efforts at the onset of the projects by incorporating the knowledge of those at the end of the chain, is what allows Enterprise A to avoid costly, and potentially difficult to correct, problems at later stages of the production process.

[42] 5S is a workplace organization method that describes how to organize a work space for efficiency and effectiveness by identifying and storing the items used, maintaining the area and items, and sustaining the new order

Another aspect of quality control is the compliance of the inputs the company uses in its production processes. Given the enormous complexity of the projects, performing quality control within the company became almost unmanageable. For this reason Enterprise A decided to transfer the quality control responsibility to its suppliers, coupled with the implementation of a rigorous follow up of defective parts detected during the assembly stages. Periodic meetings take place with suppliers where non-compliance cases are analysed and corrective measures suggested. Through this collaboration arrangement Enterprise A has managed to develop a closer relationship with its suppliers and to improve the results *vis-à-vis* the quality of the products it procures from third parties.

The provision of after sales service is one of the key components of Enterprise A's offer. The relationship between the project leader and a client does not end with the delivery of the project. Since it is acknowledged that the project leader has a close relationship with the client and knows the characteristics of the project better than anyone else, the project leader becomes the natural focal point for all after sales service required by the client.

Enterprise A attempts to offer effective, continuous and immediate assistance without delay to each customer by providing:

- Technical assistance;
- Maintenance of installations;
- Training in operation and maintenance of lines and equipment;
- Spare parts management; and
- Repair and renovation of industrial lines.

The use of ICTs allow Enterprise A to monitor at all times the machines located at the clients' premises and to provide maintenance services through the internet that cater for 90% of all problems a system could have. This way Enterprise A manages to provide almost immediate assistance to a large number of maintenance requirements without having to be physically present in the clients' production plant. In cases where this option is not suitable for the type of problem the client faces, Enterprise A has established partnership agreements with local enterprises capable of providing maintenance services to its clients. When all these options are ruled out, a team from Enterprise A's client service department travels to the client's premises to solve the problem.

The list of processes identified by the model to build the quality capability of the business seem to be exhaustive and non-overlapping as no other process has been identified in Enterprise A aimed at this purpose. The model also suggests a classification of dynamic and operational capabilities within each of the four business competences. Quality is not considered to be a dynamic capability but an operational capability that constitutes one of the basic building blocks that allows the business to compete (i.e. it is not the driving force of long term competitiveness). Txomin A., Enterprise A's Managing Director confirmed that nowadays quality management is nowadays a *sine qua non* prerequisite to enter the market, but not a distinctive feature of the offer.

***Capability to produce the desired quantities***

While quantity is not a positioning dimension present in Enterprise A's strategy, it is certainly true that the morphology of the processes that constitute this capability have been affected by it. Enterprise A undertakes approximately 30 projects per year of multiple duration. This is a small number when compared with the 100 projects that were delivered a decade earlier, but it should be said that while the number of projects has fallen, their size and complexity has increased notoriously. The capability of the business to produce the required quantities is mainly determined by the following processes:

- *Production process engineering;*
- *Tool identification and design;*
- *Planning and scheduling work;*
- *Dispatching work;*
- *Design and install production facilities.*

Production process engineering is probably one of the processes most affected by Enterprise A's positioning strategy. The company designs and builds tailor made solutions for its clients, where no two solutions are the same, therefore the most adequate way of organizing production is by using one-off or project production systems. As a result of this, each client's request is treated as an independent project requiring a specific structure that best caters the needs of each project. In the volume-variety spectrum, Enterprise A's production processes are characterized by low volumes and high variety, making the required routines ill-defined and uncertain, sometimes changing during the execution of an order due to changes in the client's preferences.

To facilitate the work of the engineers designing and assembling the offer, Enterprise A's equipment is usually composed of at least 50% of standard multi-purpose modules, while the remaining 50% are designed specifically to meet client's requirements. The use of standard multi-purpose modules not only reduces the time and cost of the design and production, but also reduces the complexity of the work required to assemble, calibrate, and set-up the final product.

Complex projects may require the formation of an ad-hoc team composed of people from the mechanical and electrical design departments as well as technicians representing the client, sales personnel, production personnel, and safe and security departments. Less complex projects do not require an ad-hoc team to be formed and personnel from different departments simultaneously participate in various projects. A project leader from the planning department is appointed to assume overall responsibility of the project and to act as the focal point for all communication with the client. Technical specialization within Enterprise A is by area (e.g. design, procurement, assembly, etc.), and project leaders must have a good knowledge of the work that is being performed by each area, and the way things are done in each area. Furthermore, project leaders must be flexible enough to be able to take on projects for different sectors. Project leaders define the work plan, set the milestones, schedule meetings, and keep clients continuously updated on the advancement of the work. The team meets weekly to conduct a joint follow up the advance of each project and to share and solve problems that may have occurred.

Since Enterprise A does not manufacture any part of the equipment it produces, it does not require large production machineries, and each order could be assigned a specific physical space within its 8.000 square meters plant. Once this is done, all resources (i.e. raw material, components, tools, and personnel) assigned to the project are relocated to that area. Due to the growth of Enterprise A's international business, the company may have to consider the possibility of increasing its production capacity with investments in plant expansion and equipment.

***Capability to produce at the desired time***

For any business to be able to manufacture an offer within the time frame agreed with the client, six processes are of extreme importance, although the nature, strategy, size, and operational structure of the business will determine which of these processes will be present and which will be critical. Those six processes are:

- *Determining inventory requirements;*
- *Keeping stock;*
- *Purchasing and expediting;*
- *Internal logistics;*
- *Handling materials;*
- *Fulfilling freight operations.*

Enterprise A subcontracts the production of different modules and components, and focuses its efforts in the design, assembly, calibration, and adjustment of the modules, as well as the installation and set-up of the equipment at the client's premises. As a result of this, Enterprise A does not keep stock of raw material or work in process. If we understand Enterprise A as a service company rather than a manufacturing company, we immediately realize that inventories take the form of databases and knowledge repositories. Enterprise A has such knowledge repositories where information about all previous and current projects is stored, including blueprints, assembly instructions, material list and all technical information related to each and every component used in its equipment. This information is fully available to every employee as per their specific needs.

The average duration of a project is six months, five months for the design and manufacturing of the equipment, and one month to deliver it and install it at the client's premises. In order to deliver on its promise, and because of the subcontracting policy, Enterprise A depends heavily on a network of reliable suppliers.

In terms of fulfilling freight operations the company is fully flexible and is able to accommodate to the needs of the client. It can sell ExWorks or deliver at the clients premises. In the cases where the company has to take care of the shipment of the equipment, Enterprise A has a network of partner transporters and freight forwarders that take care of domestic and international logistics respectively.

***Capability to produce at the desired cost***

As mentioned earlier, *cost* is not a positioning dimension and it is not a critical variable in the clients' purchase decision. This does not mean that Enterprise A does not care about keeping its costs in line, but rather that the focus of the company is on the development of other more critical capabilities. The ability to share resources among divisions, to use common components,

and to share expertise across projects allows the company to reduce costs by achieving economies of scale and scope[43].

## 9.3 Assessment of Enterprise A's competitiveness

Based on the definition of competitiveness given in chapter one, one should try to determine whether Enterprise A has the ability to consistently achieve above normal rents, become the preferred supplier in the market, and be able shape future markets by continuously identifying business opportunities, and conceiving unique value propositions for existing, emerging, and imagined future clients.

A well-crafted and well-implemented business strategy has made of Enterprise A a unique and flexible company able to conceive a distinctive offer that addresses the needs of its clients. The physical product it delivers to the clients is always different, and always adapted to address all of the client's manufacturing challenges. The characteristics of the offer and the focus on tailor made solutions and innovation, has allowed Enterprise A to lead the market and become a key player in its future evolution.

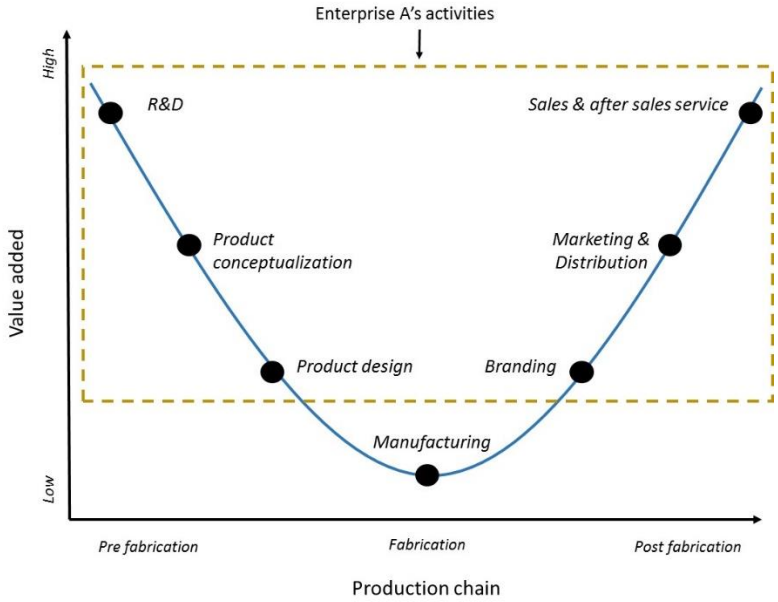
All these has been possible thanks to the capabilities the company has been able to develop. Enterprise A's knowledge management capability provides the necessary inputs for the development of the business' strategic competence and the capability to assemble an offer with the right combination of attributes. Operational capabilities, despite possible improvements, seem to be effective and efficient in developing the business' production and marketing competencies.

To determine whether Enterprise A is able to achieve above normal rents would require a thorough study of the financial situation of Enterprise A's competitors which is clearly beyond the scope of this work. Nevertheless, knowing that Enterprise A has managed to overcome all difficulties, and managed to achieve profits and continuous sales growth during economic downturns, is an indication that Enterprise A is a highly competitive enterprise. Furthermore, looking at the activities of the value chain that Enterprise A undertakes also provides evidence

[43] Economies of scale refer to the reduction on average production cost per unit as output increases, and economies of scope refer to the fact that multi-product enterprises' total production cost is less than the sum of the costs that would be incurred if each product was produced separately by a different company.

to suggest that the company has the characteristics of a competitive firm. The smiling curve[44] figure helps to identify these activities.

***Figure 14: Enterprise A in the smiling curve***




*Source: Own work*

Enterprise A has made of knowledge and its application to solve clients' problems the pillar that supports all the company's value creating activities. Through knowledge the company has been able to build a competitive enterprise with a clear strategic path, and a strong portfolio of capabilities that allow the company the necessary flexibility to cope with market changes.

## 9.4 Sources of evidence

### Documentary evidence

*Internal*

- Enterprise A's corporate web site;
- Enterprise A's corporate brochures.

*External*

- CIVEX database

[44] The smiling curve was first proposed by Stan Shih, founder, founder, president, and chairman of Acer Inc., to illustrate the value-adding potentials of different components of the value chain in an IT-related manufacturing industry, and later extended to other sectors.

- Andonegi, J., G. Arana, S. Cabezudo, I. Heras and C. Ochoa (2004), "BIELE GROUP - La apuesta por el valor añadido", Casos de Gestión Avanzada - Foro Conocimiento Empresa-Universidad.
- Multiple publicly available newspaper and press articles.

**Questionnaires and Interviews**

- Written questionnaire composed of open and multiple choice questions, and administered by email.
- Structured interview with Txomin A., Enterprise A's Managing Director, following a pre-established sequence and with pre-determined evidence gathering objectives. Date: 31st October 2014. Duration: 1.5 hours.

**Direct observation**

- Visit to the company's headquarter office in Azpeitia on the 31st October 2014.

**Physical and technological artefacts**

- Complete recording of the interview with Txomin A., Enterprise A's Managing Director.

# CHAPTER 10: ENTERPRISE B

## 10.1 The origin and growth of Enterprise B

Enterprise B[45] is an SME with a long tradition in the paper industry employing a total of 155 staff. The company focuses nowadays on the design and assembly of paper transformation systems, and subcontracts the manufacturing of the equipment to partner enterprises. Its annual turnover surpasses € 40 million, of which 97% corresponds to export markets. Enterprise B is currently exporting to more than forty countries, with China being the largest market responsible for 40% of international sales.

Enterprise B was born in 1.928 in Tolosa when Pedro P.[46] opened a mechanical workshop in the garage of his own house. His aim was to satisfy the needs of the local industrial paper sector by repairing and producing auxiliary machinery. At that time the Tolosa area had a very strong paper industry presence with 21 enterprises dedicated to the production and/or conversion of paper. The paper industry is generally subdivided in two groups: the upstream market composed of enterprises that manufacture pulp and paper, and the downstream market consisting of enterprises that use paper inputs for the manufacturing of converted paper products (e.g. paperboard containers, paper bags, treated paper, stationery products, tissue paper and disposable diapers). Enterprise B's clientele was part of the second group.

In 1.965 the company made its first important strategic shift when it decided to become a finishing specialist, focusing its activity on the manufacturing of sheeters, winders and ream wrappers. In 1.973, due to the need of expansion, the company moved to Albiztur where is currently located.

Prior to 1.975 the Spanish industry was heavily protected and the economy was closed, but on that year things changed. The economy experienced a moderate opening, and the Spanish paper industry had to cope with strong competition coming from French and Portuguese enterprises. On that year, *La Papelera Española*, the largest and most emblematic firm in the Spanish paper industry, closed. Later, many smaller enterprises, including many of Enterprise B's competitors and clients, followed the same path. Enterprise B managed to survive by focusing on innovation, value addition, and internationalization; three key characteristics that distinguish the company from its competitors even today.

[45] This section has benefited greatly from Iturrioz and Aragon (2014).
[46] For confidentiality reasons the name of the funder will remain anonymous.

Due to the small size and critical situation of the local market, Enterprise B understood that in order to survive and grow it was necessary to diversify risk and start opening foreign markets. This period coincided with the recruitment of Jualián E., a young professional with strong university credentials and able to communicate in various languages[47]. The company started contacts with various paper converting companies located in France and selling in Spain. In 1.981 the company initiated its internationalization with a single order from the French company La Rochette. This transaction was the result of a long negotiation where the deciding factor was the low price that Enterprise B was able to offer. On those days Enterprise B's machines were purely mechanical and had no distinctive characteristics. Upon the success of this fist experience Enterprise B attempted to enter the German and Scandinavian markets. These attempts failed as, unlike machines offered by its competitors, Enterprise B's machines did not meet the minimum requirements demanded by potential clients. These first experiences in international markets taught Enterprise B that while its products were of high quality from a mechanical stand point, they still had some deficiencies due to the inadequate development of their electronic components.

If Enterprise B was to succeed in international markets it needed to adapt its machines to incorporate adequate electronic components that will allow them to perform synchronized cuts, instead of conventional cuts controlled by cams. The first option was to build a strategic partnership with Siemens, but the German company refused to supply the electronic components as it was providing technical support to German companies that were competing with Enterprise B[48]. The only option left was to leverage internal knowledge and skills to develop the electrical components in-house. This was a very important moment in Enterprise B's history as they were faced with a declining local market, and an international market for which its products were not adapted. The challenge to design, manufacture, and successfully incorporate electronic components to its machines was by far the most difficult the company had to face until then. Failure to achieve this objective would have certainly meant the collapse of the company. Sergio P., Pedro's grandson, and José María G., an electrical engineer working for the company, devoted all their efforts for the following few months to achieve this objective. The result was a range of electronic components fully customized to be used in Enterprise B's products. This allowed the company to penetrate first the Scandinavian market, followed by the German market, and in the late eighties the British market.

[47] Julián E. would later become Enterprise B's Marketing Director.
[48] Bielomatik GmbH and Will GmbH (now Will-Pemco GmhH).

The learnings from this experience allowed the business to embark in projects of higher complexity from a technological point of view, leading to the continuous increase in the company's stock of knowledge and skills. The ability to develop electronic hardware components was coupled with by the ability to design proprietary software to control the hardware. Furthermore, it also resulted in a very good source of additional profits as the sale of electronic components represents nowadays 40% of the € 5 million annual sales in spare parts. All these led to the creation in 1.996 of Enterprise N, an independent manufacturer and supplier of electronic hardware material that takes care of all of Enterprise B's electronic components needs[49].

Together with the decision to internationalize the business, the crisis of 1.975 led the company to focus on innovation and value addition. In 1.979 Enterprise B developed the dual rotary system based on two motor-driven knife-holder drums, and in 1.980 became the first company to introduce an automatic pallet changing system for duplex sheeters capable of changing pallets simultaneously. Innovations continued throughout the eighties, in 1.984 Enterprise B was the first company to implement automatic pallet change at full speed without sheet rejection, and in 1.986 it achieved a reduction in waste and an increase in the production capacity of its machines by introducing a new automatic splicing system at top machine speeds based on regenerative electrical brakes. In 1.987 it developed a modem-link system as part of its software platform, and by doing so it incorporated real-time troubleshooting capabilities to its equipment.

Penetration in the British market allowed the company to identify business opportunities in the United States. The American market required Enterprise B to further innovate its offer by developing smaller high-speed cutting machines able to read patterns in the paper and adjust the cutting to those patterns[50]. After the development of its own electronic components, this was the second important technological development that would shape the company's future. Through an aid programme of the Spanish Government, in 1.990 Enterprise B created Enterprise L-B, Inc., a joint venture with a U.S. based company[51] which had been Enterprise B's sales agent in the U.S.A. since 1.986. Although the preferred option was to create its own subsidiary, the company decided to go hand-in-hand with a local company as it was considered important to

[49] Enterprise B is currently Enterprise N's only client, but the company has recently hired a marketing professional to expand its portfolio of clients.
[50] Enterprise B's machines were able to cut 350 meters per minute (i.e. almost 6 metres per second) with a precision of two to three tenth of a millimetre *vis-à-vis* a predetermined pattern.
[51] Enterprise B controlled only 49% of the shares, while the remaining 51% was controlled by the American company.

benefit from the name and recognition of a company already established in the market. Towards the end of the nineties many American paper groups started relocating their production facilities to Asia, first to Indonesia and then to China. Disputes over exclusivity rights to exploit the Chinese market led to the closure of Enterprise L-B, Inc., and the opening in 1.992 of a sales representation office in Beijing responsible for the identification of clients from the Chinese and Asian markets, as well as to provide technical service to those markets.

In 1.997 another technological breakthrough, coupled with existing knowledge, and a smart adaptation of its products allowed Enterprise B to enter a new market niche: the banknotes market. Enterprise B introduced a technology capable of going through the entire cutting, packaging and stacking process without the need to engage in subsequent handling of the final product. In addition to that, the company introduced the carbon fibre knife holder, which notoriously improved velocity, and developed a new high-performance overlapping system which guaranteed faster operation speeds without damaging the surface of the product. In 2.008 the company revolutionised once again the banknote sector by introducing the double sheeter.

In the year 2.000 Enterprise B started implementing a new customer oriented policy that will further change its offer by including advisory services to help its clients integrate the equipment into its production processes. At this point Enterprise B started offering turnkey solutions that will take care of the installation and set-up of fully integrated paper conversion plants.

The irruption of China in international markets was an important shock that challenged Enterprise B's capabilities to adapt. China's enormous bargaining power, resulting from its large investment capabilities and the size of the contracts that were being negotiated, generated a 35% to 40% fall in international prices within a very short period of six years. As a consequence of this, Enterprise B experienced loses in the years 2.006 and 2.007. Despite having sufficient sales orders to work at full capacity, the prevailing prices prevented the company from making profits. The company needed to adjust to the new market conditions if it wanted to survive[52].

[52] The model presented in chapter five could help us make an initial identification of three potentially underperforming areas that were preventing the business from making profits in the Chinese market. Problems could reside in:

1. The inability of the business to negotiate sales contracts. This would imply that the company did not have adequate formal or informal procedures to prepare product specifications and skills to negotiate international contracts. Despite potential improvements, the fact that the company had over 20 years of experience conducting successful international transactions in more informed and demanding markets, made it very unlikely that Enterprise B's problem resided in this operational marketing capability.

Led by an external consultant, the company undertook some isolated initiatives that generated little tangible results and affected negatively the motivation of the staff as they felt blamed for the bad results. The failure of these initiatives led the owner-managers of the firm to undertake more drastic measures, this time leading to the hiring in 2.008 of a new Managing Director and distancing themselves from the day-to-day management of the business.

Gustavo L., the new Managing Director undertook the enormous task of transforming the company's administrative and operational processes to gain effectiveness and efficiency from a holistic point of view and not simply addressing the problems of each department independently. The first step was the mapping of all the critical processes of the company and the collection of vital information to assess the performance and potential problems of each area. The strategic plan 2.009-2.011 was approved by the Managing Council with the sole purpose of improving internal efficiency levels. The key areas addressed were procurement of inputs and raw material, and the formalization and standardisation of internal processes. These initiatives constituted Enterprise B's third important milestone that shaped the successful company it is today.

The company merged the two procurement departments that existed at the time, established formal competitive processes for the acquisition of inputs and raw material, and incorporated new suppliers to its databases. The impact of these initiatives was a 35% reduction in the cost of acquiring production inputs in only two years. Furthermore, the company's R&D department started to experiment with new materials for the production of its equipment. To achieve further efficiency gains, Enterprise B restructured the way it handled its manufacturing processes and organized them by projects, assigning one project leader to each order. The standardisation of processes, the use of subcontractors for the production of non-essential parts, and the utilization of standard modules for the manufacturing and assembly of Enterprise B's machines, simplified the production processes while allowing for the high levels of

2. The inability of the business to craft an offer that differentiates the business from its competitors (i.e. the business was selling a commoditized product). Again, until this point Enterprise B proved to have a well-developed strategic competence that allowed the company to innovate and adapt its products to ever changing market environments. The likelihood that Enterprise B's failure to make money in China was due to an inadequate development of its strategic capabilities or its dynamic production capability responsible for designing an offer with the right attributes, was very low.
3. The existence of one or more ineffective and inefficient production processes that increased costs unnecessarily. This was an area where Enterprise B had not focus before, and most likely the root cause of Enterprise B's problems.

customization required by the clients. Thanks to all these changes productivity improved drastically and allowed for an increase in the number of machines produced.

Even though the Chinese market did not shrank until 2.014, in the year 2.011 the company already identified the first symptoms of deceleration and realized that Chinese demand will fall in the coming years[53]. As a result of this, Enterprise B decided to review its internationalization strategy as part of the new Strategic Plan 2.012-2.014. The focus of this new strategic plan was diversification and the quest for business opportunities outside the core business. It was clearly understood among the strategy makers that if the company wanted to cope with market challenges it had to change, and instead of reacting to customers' demands and moves as it was doing until then, it had to create its own market and follow a more proactive strategy.

A prerequisite for the success of this new strategy was the identification of the distinctive knowledge that resided inside the company and that constituted Enterprise B's essence and made it different from competitors. To assist in this process the company hired Loop, an enterprise specialized in engineering and innovation based in Barcelona. In order to benefit from the collective knowledge spread across the organization many people throughout the company was invited to participate in this creative exercise. This was a very interesting period at Enterprise B as there was a collective will to participate in the shape of the company's future. Through formal and informal discussions a large number of employees was able to contribute their ideas on where the strengths of the company resided, how the company should look like, and where it should go. According to the Managing Director, It was at this time when concepts such as strategy, diversification, knowledge and know-how became part of everyone's vocabulary. This strategy design exercise was a turning point for Enterprise B as it allowed the company to change the way it view itself, and consequently, to reinvent itself.

Enterprise B came to the conclusion that the company's unique strength was the application of its technical knowledge with two purposes: 1. to accurately manage a paper conversion line in terms of tension control, speed, etc.; and 2. to accelerate and decelerate something at great speed and with great precision. In the words of the Managing Director: "*This know-how is what Enterprise B is all about, the rest is nothing but iron and screws*".

In terms of the identification of business opportunities, Enterprise B decided that while continuing supplying its current markets (i.e. large paper conversion plants), it will

[53] The company estimates that this trend will continue and within the next five years the Chinese market will shrink from the current € 20 million to approximately € 7 million.

simultaneously follow two tracks: 1. to identify synergies with other international producers of equipment, even if they served different markets; and 2. to identify places outside its core market where Enterprise B's know-how could be applied.

Two important developments came out of the first track. The first one was an agreement with the paper division of the Voith Group for the design and production of cellulose pulp sheeters[54], which required the adaptation of its capabilities to produce wider sheeters able to operate in harsh environments full of steam and moisture. The first unit of this machine was shipped in the first quarter of 2.015 to a client in the United States. This was something Enterprise B had never done before and it allowed the enterprise to enter the upstream market for the first time. The second development was the identification of business opportunities in the downstream market of small-scale paper converters. These opportunities resulted from market changes that were taking the conversion of paper closer to the customer end of the value chain, and led the company to develop a new line of low cost, small, modular, and scalable sheeters. The first sale of these machines was to a Mexican client, the second to a French company, and a third one will be delivered to a client in Pakistan. Given that the machines were produced in Spain, and that the costs were lower than expected, the original idea of setting up a plant in China for the manufacturing and assembly of these machines was discarded.

The second track led to the identification of further opportunities in the banknote market, a market where Enterprise B was already present with a relatively low value-added offer consisting of sheeters and winders. The identification of the opportunity was the result of a proactive effort of the marketing and technical teams to scan the market and look for new ways of applying its existing knowledge. The way Enterprise B identified this opportunity was through a German company, that is now a competitor but it was not at that time. Enterprise B saw the machines this company was manufacturing and identified several areas where its knowledge could be used to improve the machines. Initially Enterprise B went to Germany and offered this company a partnership agreement, but the company refused. As a result of this Enterprise B initiated the internal development of its own technology and equipment. In 2.013 Enterprise B developed and patented a technology that improved laser cuttings and could be used to strengthen the security features of banknotes. Through the combination of this patent with existing technical knowledge Enterprise B developed a technology that was far superior to that of its competitors, and eventually became the only company in the world able to produce machines capable of making perforations on the banknotes and incorporating an holographic

[54] Until then, the company had only designed and produced sheeters intended for paper and cardboard.

band at the centre of the perforation giving the impression of it being floating. Nowadays, the production of banknote-processing equipment represents 10% of the total business and has allowed the company to be recognized as a world leader in this type of technology. Among Enterprise B's clients we find banknotes factories in Spain, Ukraine, Pakistan, India, China, Russia and Australia, and is currently in discussions with several European National Central Banks. In the words of the Managing Director, the secret of success resides in the company's ability to use the knowledge that already existed in the company to create new knowledge and conceive new business opportunities.

In 2.012, the company launched Enterprise B Connectivity Cloud, a system running on a fully customizable software and capable of monitoring in real time the activity of all Enterprise B machines installed anywhere in the world.

The Strategic Plan 2.012-2.014 was a very important milestone in Enterprise B's history as it allowed the company to shift its attention from the machines it was producing, to the capabilities it possessed and the identification of places where these capabilities could be applied. The success of the diversification strategy could be summarized by the following results:

- Two new markets have been opened (i.e. downstream market of small-scale paper converters, and upstream market of paper producing companies);
- The development of two new product lines that did not exist in 2.011, and represent nowadays one third of total sales (i.e. the Compact line for small-scale paper converters, and the line of cellulose pulp sheeters);
- New technology capable of adding value to its existing offer has been developed and patented (i.e. hot stamping and laser perforation patents that added value to the offer taken to the banknote market);
- The company managed to segment the market. In the past the company addressed every market with the same technology embedded in its machines, but as of 2.012 Enterprise B has been able to identify the specific needs of each client group and craft an offer specifically designed for them.

Another important result coming out of the strategy design process was the decision to restructure the company's governing bodies and to create three specialized committees capable of addressing any technical problem the company could face in the future (i.e. *innovation*

*committee*, *production committee*, and *safety and hygiene committee*). These committees worked under the overall supervision of the *management committee*[55].

All the initiatives implemented since 2.008 allowed the business to have positive results and to meet its sales expectations despite the global economic crisis. The internationalization strategy, the development of its own proprietary technology, and its R&D efforts, allowed the business to increase its sales and achieve record profits.

The 2.015-2.017 Strategic Plan will focus on further developing Enterprise B's marketing capabilities in international markets and on the provision of after sales services. Enterprise B's strategic philosophy is that each strategic plan adds something to the previous ones. In that sense, the new strategic plan will continue with the quest for efficiency improvements of the Strategic Plan 2.009-2.011, and will continue with the diversification efforts of the Strategic Plan 2.012-2.014. The Managing Director sees the future of the company always linked to the paper industry, but from a broad point of view including not only paper, but also cellulose pulp, nanocellulose, printing, and packaging. Furthermore the company will be exploring ways to apply its capabilities outside its core market, particularly in the plastic sector.

## 10.2 An assessment of Enterprise B's competences and capabilities

### 10.2.1 Enterprise B's resource management competence

As in the previous chapter, this section will focus on trying to understand how the business manages its knowledge, and how the management of other resources affects the business knowledge base.

The Managing Director has highlighted the importance knowledge has for the company, and has expressed his overall satisfaction with the knowledge and information available for the development of the business' strategic, production, and marketing competences. While there is an acknowledgement that some process could be improved as much of the information gathered for strategic purposes lacks real value, it seems that it is relatively easy to determine the relevance of such knowledge and information. Furthermore, the Managing Director recognizes that the different initiatives put in place had a very positive impact on the working environment and the development and strengthening of the business' capabilities.

[55] Composed of the Managing Director and the responsible of service and technical assistance, and assembly.

***Knowledge for strategic decisions***

Due to its marked bias towards innovation and the continuous sophistication of its offer, Enterprise B has always been a knowledge-centred organization, even if it was not acknowledged as such. The Strategic Plan 2012-2014 put knowledge management at the heart of Enterprise B's activities, and the actions undertaken by the firm during its drafting and upon its completion, confirm the preeminent role of this capability.

Strategic decisions are made by a small group of individuals with thorough understanding of the business and vast industry experience. This team meets regularly to share general industry-wide information, as well as more specific information about competitors' moves, and clients' reactions and expectations. In order to benefit from the knowledge that is spread throughout the organization and use it for strategic innovative thinking, the company conceived a participatory approach to strategy design.

Top management is mostly responsible for collecting knowledge and information for strategic purposes through their interaction with external stakeholders and their participation in sector associations, trade fairs and relevant industry events (e.g. Enterprise B participates in industrial forums organized by Gipuzkoa's Business Association (Adegi). Despite not having personnel fully or partially dedicated to the collection of this type of information, the enterprise has mechanisms to gather knowledge and information to craft a strategy for domestic and international markets. An important aspect of these mechanisms is that they do not rely on publicly available sources of information such as newspapers, specialized publications, and television. On the contrary, suppliers, clients, and employees play an important role in the provision of VRIN knowledge and information for strategic purposes.

As part of the strategy design process, the Managing Director invited an external company to help them identify the company's unique strengths, which resided in the VRIN knowledge Enterprise B was able to develop over time. The identification of this unique knowledge allowed the business to think differently, unconventionally, and from a new perspective in terms of the quest for business opportunities. This is a good example of how the company actively seeks to identify valuable internal knowledge, and to absorb external knowledge with the specific goal of crafting business opportunities outside the core business and break path-dependency.

Enterprise B is making good use of ICTs to gather valuable information to make strategic decisions. The **connectivity cloud** is a unique tool that allows Enterprise B to have real time data on its client's activities and the performance of its machines. This way, the company is able to

assess the adequacy of its offer, and to identify potential changes in customers' needs. In 2.010 the company developed its own **client relationship management** software tool that offers market intelligence functionalities. The tool allows management to properly segment and profile existing clients, as well as make aggregate comparisons between regions, types of clients, types of machines, and features of each machine. Last but not least, the company is currently exploring sophisticated ways of identifying competitor's moves by tracking **social networks** and opinion leaders (e.g. ASPAPEL – Spanish Association of Pulp and Paper Manufacturers). The idea is to develop a tool capable of monitoring and gathering information published by opinion leaders in social networks, and by doing so allow the company to have updated industry information, competitors' moves, and clients' opinions. As far as the Managing Director, no competitor is developing similar tools.

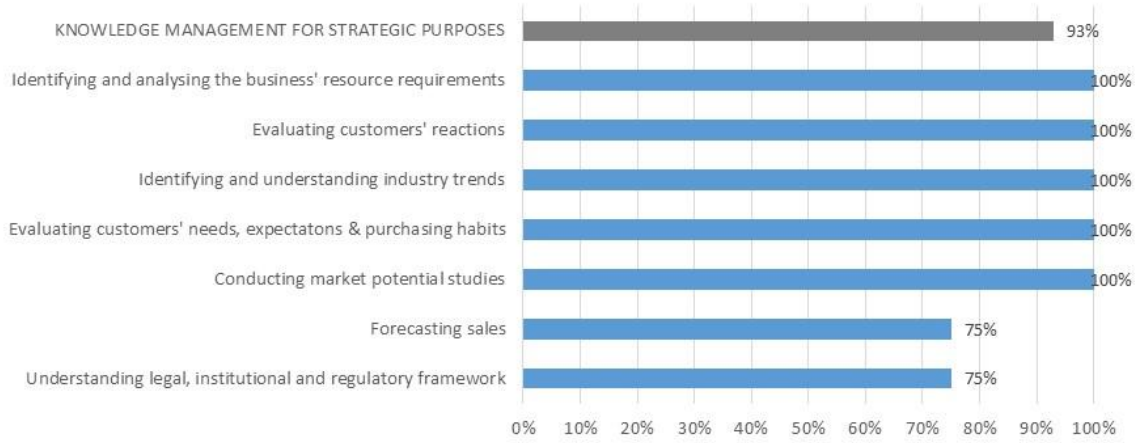
In order to allow the company's strategists to make informed decisions, Enterprise B has internal mechanisms to gather real time relevant information from the different departments of the business. Enterprise B's **enterprise resource management** software tool allows anyone in the enterprise to track the stage of development of each order and to identify areas susceptible of being improved. The information is updated every 24 hours and it helps management to track a number of critical indicators. Through this software the company is able to gather critical information such as:

- The number of hours worked in each area of the business;
- The name of each employee assigned to each order and whether the employee is presently working on that order or not;
- The stage in the production process of each order (e.g. design, procurement, assembly);
- The degree of advancement of the work of each area;
- The type of materials being used, ordered, received, and dispatched to the assembly floor;
- Discrepancies between real and budgeted costs.

All these information help management make accurate assessments of the business capabilities, resource requirements, and facilitates strategic planning. The information gathered by this tool is available to everyone in the company with specific access to the information they need to perform their activities.

The diagnostic tool of chapter seven allows us to put a numerical value to Enterprise B's ability to manage knowledge for strategic purposes, and to highlight critical improvement areas.

***Figure 15: Assessment of Enterprise B's knowledge management for strategic purposes***




*Source: Own work*

***Other initiatives affecting the management of knowledge***

The crisis Enterprise B had to go through between 2.006 and 2.007 was instrumental to reach an important conclusion: If the company wanted to succeed in international markets and to secure its survival it was necessary to increase the participation and commitment of employees, to increase the company's ability to learn, to work in a collaborative manner, and to innovate.

In order to promote transparency and facilitate information flow, four communication levels were identified: 1. Management Council; 2. Management Committee, 3. Middle management, and 4. Workers. On top of informal and/or ad-hoc meetings, the first three groups meet regularly every three months, with the exception of the Management Committee that meets every four to eight weeks to discuss all operational issues related to projects, sales, profitability, suppliers, etc.

To improve communication with employees an **internal communication team** was formed in 2.011. This team is led exclusively by employees without participation of top and middle management. Through this internal communication team employees determine what information they need and they want to receive from management. The team designed an information card that management has to complete every three months and submit to all employees together with their payslip. These information cards should include the indicators employees would like to follow with a justification for the variation of each indicator, as well as operational issues such as the amount spent in procurement, in the reform of production

facilities, how management is dealing with problems identified in the past, etc. This is an example of top-down information flow that has contributed to build trust and motivate employees. The internal communication team works with an external company that helps them be more dynamic and evolve.

Additionally, management organizes every six months a **meeting with all employees** to discuss the strategy, future projects, the business' profitability, and any other topic that may be of interest to employees. In order to convey important messages management uses all tools at its disposal, including unconventional means such as extracts of movies that depict a specific situation the company is going through.

In order to fill the need to incorporate new personnel, Enterprise B has signed **agreements with vocational training institutions**. Through these agreements the company has the possibility to incorporate new people to the company, first as interns (6 to 8 per year from March to June), and then as full time employees. All new recruits go through an internal training process, and very early on they are ready to assemble the machines. The real difficulty of the work is not in the assembly, but in the set-up of the machine. There are 35 staff in assembly, of which 20 are indispensable as they are specialized in setting-up the machines and getting them ready to start producing. The only assembly work that is critical for the business is the assembly of the cutting block as it is the heart of the machine and require specialized mechanical knowledge. Even though there is no formal mentorship programme, new recruits are assigned to a team formed of experienced co-workers, and are soon sent to the clients' premises to assemble and set-up the machines. **This on-the-job training** through team work favours the transfer of tacit technical knowledge and the development of the necessary skills to perform all required tasks.

Enterprise B makes extensive use of **patents** to protect its intellectual capital, but at the same time the Managing Director is of the idea that enterprises are too afraid of potential knowledge loss. The Managing Director believes that sooner or later everything can be copied and replicated, therefore the key to remain competitive is to be continuously ahead in terms of knowledge development and application. Chinese manufacturers have managed to copy the mechanics of Enterprise B's machines, but they have never managed to replicate their precision and functionalities, as they are based on Enterprise B's electronic and technological components. All mechanical components of the machine are easily replicable, but to replicate the electronic components requires specific know-how that only resides within the company.

Upon completion of an order, Enterprise B conducts **after action reviews** to evaluate and capture lessons learned. This allows project team members, and eventually the rest of the company, to discover what happened, why it happened, and how to sustain strengths and improve on identified weaknesses. This has proven to be a valuable tool to generate and share technical knowledge that helps the entire company to improve its effectiveness and efficiency.

***Knowledge management enablers***

In order to create a conducive working environment that would allow the company to revert the negative results obtained in 2.006 and 2.007, the new Managing Director focused his initial efforts on improving employees' motivation. This was achieved by following a policy of **full transparency and clear communication**. Two immediate decisions were made. First, it was decided that partners will refrain from engaging in direct or indirect communication with employees, and that the responsibility for communicating with staff was delegated in full to the new management. The second decision was to make the company's financial accounts public to all employees, so they could have a clear picture of the situation the company was going through. The financial accounts continued being public even after the company started making profits again. These initiatives contributed to increase the credibility and generated mutual trust between management and employees.

Furthermore, the policy of full transparency contributed to improve the working environment and to implement operational changes needed to cope with market fluctuations (e.g. adjustment of working hours). Agreements with the employees were reached fast and in a very natural way as everyone understood what was going on within the company and with the flow of orders.

Management developed a **Strategic Map** that allowed each employee identify where they fit within the overall strategy of the company, and determine how they were contributing to the achievement of the strategy. This helped employees understand the logic behind the performance indicators by which they were being assessed, allowed them to see how their work affect other areas of the business, and facilitated a self-evaluation of their work *vis-à-vis* the achievement of the business strategy. This helped to improve employees motivation and commitment as it helped employees find a meaning for the, sometime repetitive, tasks under their responsibility.

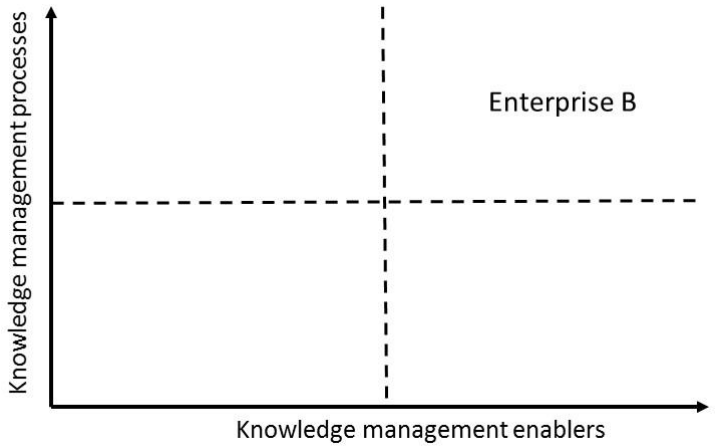
The structural changes implemented in 2.012 can be analysed from a knowledge management perspective and serve as a good example of how the business organization structure can be

adapted to foster knowledge transfer and creation. The three specialized committees created as part of the Strategic Plan 2012-2014 (i.e. the *innovation committee*, the *production committee*, and the *safety and hygiene committee*) function like formal **communities of practice** that create tacit knowledge through the interaction between its members. These committees have a clear mandate and are composed of a multidisciplinary team with common interests. Their main purpose was to share and create new knowledge, either as a group or as individuals inspired by the group, which could be used to solve a specific problem or to improve the company's operations and offer. Through formal and informal group interactions each member was able to break free from narrow disciplinary conceptions, breakthrough thinking and creativity was promoted, and new solutions to current and future challenges were identified.

***Assessment of Enterprise B's knowledge management capability***

Enterprise B's knowledge management capability has reached the highest levels of development with well-thought and well-designed processes and initiatives, as well as a supportive environment with adequate enablers. The company's knowledge management initiatives cover the identification, collection, storing, and sharing of knowledge and information to be used for operational purposes, but also, and most importantly, for strategic purposes. Unarguably, Enterprise B can be placed in the top right quadrant of the knowledge management maturity graph, signifying that the company has achieved the highest stage of knowledge development (i.e. know-why as per the expertise ladder presented in chapter three).

***Figure 16: Maturity of Enterprise B's knowledge management capability***




*Source: Own work*

### 10.2.2 Enterprise B's strategic competence

The business strategic competence is developed through a set of dynamic capabilities. These capabilities provide the business the ability to design and plan a business strategy, to identify the most adequate organizational structure, and to innovate and adapt its capabilities.

Enterprise B's clearly masters all aspects of strategy design and planning as it has been able to design and successfully implement a complex business strategy. Through innovation, flexibility and customized solutions the company provides a top *quality* offer to its clients that incorporates all the *attributes* they are looking for. The offer that Enterprise B takes to the market includes a wide range of sophisticated manufactured products (i.e. sheeters, winders, ream wrappers, core cutters, unwind stands, automatic lifting systems, and stack and reel conveyor lines), as well as an important service component (i.e. design, R&D, maintenance, equipment upgrade, training, and the connectivity cloud) that adds value and complexity to the offer. Given that Enterprise B competes with very strong international companies, the *cost* associated to its offer is something that will always play a role in the decision of the client, therefore it is something that Enterprise B needs to pay attention to. The Strategic Plan 2.012-2.014 set the goal of further differentiating the company and its offer through the development and strengthening of a *brand name* that will embrace the essence and values of the firm.

Enterprise B also offers turnkey solutions to its clients. With this offer, Enterprise B takes care of setting up paper conversion plants, including the design, installation, and commission of all machinery needed to transform paper with the required quality, efficiency and cost parameters determined by the clients. The latest example of how well clients are receiving this offer is the commission of a turnkey solution that included the design, manufacture, and set-up of an automated plant including five paper sheeters and Enterprise B's connectivity cloud for a Chinese client. Enterprise B competed for this contract with the world's largest equipment manufacturers.

Enterprise B is an open minded enterprise that has taken on the challenge of thinking outside the box, not only in terms of the development of new and innovative products, but also in strategic terms. The company challenged itself to consider business opportunities outside its core business, and by doing this it further expanded its productive opportunity set. Enterprise B is an enterprise that is not afraid of assuming calculated risks and of addressing strategic challenges in new ways.

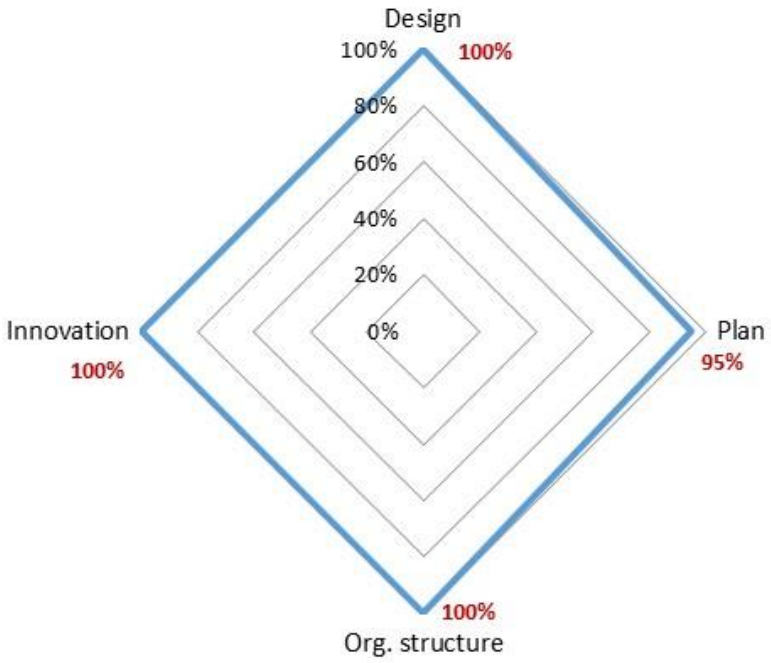
In terms of organization structure, Enterprise B has recently gone through important changes of its governing bodies and has created three specialized committees aimed at enabling the enterprise to cope with the challenges the future may bring. This was a needed change as it was acknowledged that the existing organizational structure was not conducive to make the operational decisions the enterprise required. Through the creation of specialized committees, technical issues could be addressed in a more effective and efficient manner, generating notorious improvement in the quality of the work and the solutions proposed.

At Enterprise B, innovation is a key aspect of the company's culture and philosophy, therefore it is not surprising that the innovation committee[56] is the most active of the three technical committees created as part of the 2.012 restructuration. The company has an R&D department and a very strong and versatile technical office with 21 staff. In 2.013 Enterprise B devoted 2% of its profits to R&D, resulting in two new patents. With the aim of creating new business opportunities, the company is now working on developing the ability to cut plastic, nanocellulose, graphene, semiconductors, and tires, based on the existing ability to cut paper. This will eventually require the adaptation of its machines (i.e. the adaptation of its production capabilities) to meet the needs of these new markets, and its marketing capabilities to sell these new products. Furthermore, the company is exploring and experimenting with the possibility of getting into the business of offering paper printing solutions.

Enterprise B has clearly managed to mutate over time, and to adapt to a changing economic environment and to the new demands from its clients. From a mechanical workshop dedicated to the production and repair of equipment, Enterprise B became a leading firm in the design and manufacturing of tailor-made equipment and turnkey solutions for the paper industry, with a strong component of R&D, innovation, and service support to its clients. Enterprise B managed to successfully make the transition from an enterprise focused on its products, to an enterprise that focuses on its capabilities and on their application to solve client's problems. This transition allowed the firm to improve its offer, and to envisage and undertake opportunities outside its core business. Enterprise B is a clear example of a company that successfully expanded its productive opportunity set through knowledge management, adequate strategic thinking, and innovation. The figure below shows a graphical representation of Enterprise B's strategic competence, and the dynamic capabilities that constitute it.

[56] Composed by representatives of the R&D, mechanical, electronics, assembly, and marketing departments.

***Figure 17: Assessment of Enterprise B's strategic competence***




*Source: Own work*

### 10.2.3 Enterprise B's marketing competence

As per the interview with the Managing Director, it was clear that the internationalization strategy of the business had an important impact on the morphology of this competence, but not necessarily on the number and nature of its constituting capabilities. The marketing competence is responsible for identifying and getting clients for the business' offer. To achieve these objectives, the business needs to build three capabilities.

***Capability to communicate***

The Managing Director confirmed that the internationalization strategy had very little impact on this capability. The model in chapter five suggests three important processes to develop the capability to communicate with current and potential clients:

- *Developing a brand name;*
- *Advertisement and promotion;*
- *Preparing sales material.*

The Strategic Plan 2.012-2.014 assigned to this capability high level of importance due to the decision to boost the company's image by strengthening its brand name and use it as a

positioning variable. This is particularly true in the small-scale paper convertors and printers market where the Enterprise B brand is almost unknown. As part of the technical discussions on how to penetrate this market, the issue of whether Enterprise B should go to the market with its own brand or create a new one received special attention. It was acknowledged that Enterprise B was entering into new territories with no guarantee of success. Failure could potentially damage the brand among large paper converters who were the core market for the company. The final decision was to go with the Enterprise B brand despite the risks, but ensuring that the differentiating characteristics of Enterprise B's machines were present in the new product line developed to serve this new market.

The nature of Enterprise B's clientele facilitates the spread of Enterprise B's message without the need for the company to embark in large communication campaigns. Enterprise B's clients are enterprises controlled by large corporations in the paper industry[57]. Once Enterprise B manages to successfully satisfy the needs of one of the companies owned by one of these large groups, the remaining enterprises controlled by the group receive through internal communication channels all information relative to the machine's characteristics, performance, and degree of user satisfaction. This serves as an invaluable communication channel as the information reaches potential clients not from Enterprise B but from satisfied clients in the same group.

Enterprise B makes extensive use of new technologies to communicate with its clients. The company's web page has been effectively designed to convey the company's image and latest developments, as well as a clear message of what clients will get when dealing with the company. The site is available in five languages (i.e. Spanish, English, French, German, and Chinese), and includes different contact points for prospective clients, media, and job seekers. Through the web page potential clients can also access sales material such as technical sheets and videos for available products.

Enterprise B participates in trade fairs, but is expecting that its participation in this type of events will be discontinued in the near future, or at least it will be refocused on the participation in specialized events (e.g. Enterprise B will participate in a trade fair in Manila, Philippines, specialized in banknotes). According to Enterprise B's Managing Director, trade fairs are not conducive to close business deals, and at best they serve to inform clients what the company is

[57] For example, La Rochette, the company that placed the first order that initiated Enterprise B's internationalization is controlled by the group Cascades. Other large paper producer and converter groups are: Mondi Group, International Paper, Asia Pulp and Paper (APP), and StoraEnso.

doing, or to make the company known in new sectors such as the one of small-scale converters. It is the firm belief of the company's management that there are other faster, more dynamic, and effective ways to reach clients. One such way to share the company's message with potential clients is through an adequate management of social networks and by influencing opinion leaders.

***Capability to obtain orders and secure sales contracts***

The degree of success of this capability differs from market to market. European and American clients make investments every three to ten years, while Chinese clients tend to be much more dynamic[58]. Large clients know exactly what they want, they know the product, its capabilities, and have a much clearer understanding of the entire production processes. The discussions with these clients are focused on very specific technical issues and on the terms of the order. Smaller clients in many instances have no idea what they are buying and the capabilities of the machines. For this reason Enterprise B needs to engage in a more "educational" conversation with them in order to educate them about the machines' capabilities and the different ways they can be used. This "ignorance" was also identified in the early transactions with large Chinese clients, who clearly were buying equipment without understanding what they were buying. With time the Chinese market became much more demanding in terms of specifications.

In the small and mature downstream market (i.e. large enterprises controlled by large paper conglomerates) where the company supplies sheeters and other equipment capable of handling large volumes, Enterprise B is always within the three or four finalists competing for the contract. Competitors in this market are Bielomatik GmbH and Will-Pemco GmbH from Germany, and Miltex SpA from Italy. In the technologically driven banknote market Enterprise B is the world leader, and thanks to its R&D efforts, the company has managed to secure an uncontested market position where it holds a monopolistic position for high-technology equipment. In new downstream markets and in markets that do not value technology the company is still a much smaller player. These markets are currently being served by small manufacturers, in most cases Indian, offering a low quality product.

The business capability to obtain and secure sales orders is mainly developed through three processes:

[58] With one particular Chinese client Enterprise B closed eleven large contracts within the last fifteen years.

- *Prompting and responding to sales inquiries;*
- *Pricing and quoting;*
- *Negotiating.*

The internationalization strategy of the business had an important impact on the way the business developed this capability. The first international sales negotiations were managed from the headquarters' office, but with time the company identified more effective means of contacting clients. Nowadays the headquarters office in Albiztur focuses on the negotiations with domestic clients, and delegates the identification of international opportunities to a worldwide commercial network of sales agents. The development of this network of sales agents was not initially planned by the company, as it was the sales agents active in the paper industry that contacted Enterprise B to offer their services. The company has nowadays a more structured approach to the development and strengthening of this network. Now, when attempting to enter a new market, Enterprise B proactively searches for the most adequate sales agents to represent the brand as per a set of minimum requirements the company has defined. Once a sales agent identifies a solid sales opportunity, a specialized team from the headquarters office conducts the technical presentation and negotiates the deal with the potential client. The marketing team in Albiztur does not conduct any sort of market scanning nor lead the sales agents to contact specific clients or explore specific opportunities. In the case of its largest market, China, the company has established a subsidiary office in the Asian country responsible for handling marketing operations.

Through the web page, Enterprise B offers its clients a configurator system that allows them to configure their production system requirements by means of selecting primary and auxiliary equipment, and the inclusion of the technical requirements for each equipment. The configuration is used by Enterprise B's marketing team to initiate discussions with the potential client leading to the closing of the sale. This functionality was designed having small-scale paper convertors and printers in mind, as they are relatively new in the market and tend to be unfamiliar with the technical specifications and functionalities of Enterprise B's equipment. Enterprise B's web page is being currently updated as the management is not satisfied with its lack of digital marketing orientation, and lack of sufficient flexibility to adapt to the different needs of each region and/or client.

The company also participates in international trade fairs such as DRUPA, the most important print and paper equipment exhibition in the world, to display its latest innovations and solutions to potential clients and the business community. It is through the participation in this trade fair

that Enterprise B managed to create interest, and later sell in the year 2.012 its first two machines with the Connectivity Cloud functionality to a Slovenian client.

While the final price is an important factor to close the deal, its importance in the negotiations has fallen for those clients that demand technology (e.g. contract negotiations in the banknote sector is never about costs, except in the case of China). In terms of pricing, Enterprise B believes its technology should be priced up to 20% above the Italian competitor, and slightly below its German competitors. This pricing system works well in Europe and the U.S.A. where clients are ready to pay extra for the technological components incorporated in the machines. In countries like India, where clients do not value technology, the only variable in the negotiation is the final price. For those markets Enterprise B has developed a product line with limited technological content that while able to compete exclusively on prices it maintains the precision levels and the quality of cut that characterize all Enterprise B's machines.

The dynamicity of Enterprise B's R&D and technical departments engendered the need to identify and secure markets for the products that were constantly being developed within the company, even before those products were ready to reach the market. Enterprise B realized that its marketing capabilities to generate sales orders were too focused on the short term as the marketing department was working on the sales opportunities brought to them by the sales agents, but was not proactively working on generating medium to long term business opportunities. The company is currently working on adapting its ability to cut paper into the ability to cut plastic, nanocellulose, graphene, semiconductors, and tires. This will require changes in the business capability to reach clients and secure sales orders, and also the incorporation of new employees in the marketing department.

***Capability to distribute***

This capability consists in the selection and development of the most effective and efficient network of intermediaries to facilitate the flow of goods, services, information and money. Although Enterprise B sells abroad with the assistance of its sales agents around the world and its subsidiary in China, the company does not have distributors, nor licensing or franchising agreements with third parties. Certain components of Enterprise B's offer are distributed through the internet with the help of tailor made software and hardware solutions (i.e. the remote monitoring and maintenance service, a dedicated web site that allow clients to access information and software updates).

### 10.2.4 Enterprise B's production competence

The Managing Director confirmed that production operations destined to the domestic and international markets were identical, but highlighted that they required high levels of adaptation in order to strengthen the company's position in international markets.

***Capability to produce with the desired attributes***

The business capability to craft an offer with the desired physical and functional attributes is developed mainly through three processes:

- *New product design and prototyping;*
- *Product alteration and enhancement;*
- *Product discontinuation.*

Reliability and adaptability are two essential attributes that clients are looking for when assessing the purchase of production equipment. To ensure reliability, all of Enterprise B's products run on Enterprise B electronics which are specifically designed for Enterprise B s equipment. To add flexibility, Enterprise B is committed to design open-source software to run its products, in such a way as to allow any kind of adjustment and customization the client may require, and to ensure full integration with any system used by the client.

Enterprise B is perfectly aware that its machines are a long-term investment for its clients, therefore it designs its machines in such a way that they can be adapted to the clients' changing needs. An important part of Enterprise B's offer is the availability to provide machine upgrades aimed at adapting existing Enterprise B machines to the ever changing needs of its clients. As a result of this it has developed the *machine upgrade service*. If required by the client, Enterprise B is able to conduct a detailed analysis of the upgrade possibilities and potential output improvements of each machine. Enterprise B has a dedicated team devoted to the identification of ways in which its machines, once sold to the client, can be upgraded to meet new demands, improve performance, and increase output. Another aspect of Enterprise B's equipment upgrade service is that it is done in a very short time independently of the geographical location of the client.

Enterprise B's constant efforts to monitor the market to anticipate client's needs and to develop innovative solutions led to the design of the new "Compact" product line. This innovation was born out of the identification of market changes by which paper conversion was moving closer

and closer to the final customer. The industry was shifting from mass production of large batches of 400 tons of paper cut with the same format, to smaller batches ranging between 1.5 to 3 tons and greater variety of formats. The cost structure of large enterprises in the paper industry prevented them from supplying what the market was demanding, therefore there was a proliferation of small-scale paper converters who needed a flexible, scalable, and low cost cutting machine. The existing equipment designed to maximize efficiency by producing large batches could not cater for the need of these new market players, therefore Enterprise B's R&D team started working on a new product line that resulted in the birth of the "Compact" line. While being low cost machines, as small-scale paper converters and printers could not afford expensive equipment, the new machines maintained intact the characteristics that made Enterprise B's machines known. Enterprise B identified two characteristics that could not be missing in its offer: precision[59], and cutting quality, independently of the volumes to be cut and the fact that given the need to reduce costs, the machines will not be produced with the high-end components Enterprise B uses for other markets. Furthermore, anticipating that in the short term there will be an increase demand in the European Union for specialized equipment, Enterprise B's R&D teams have already partnered with CDTI[60] and taken part in the Gaitek[61] programme for the design of innovative solutions. These are just some examples of how Enterprise B centres all its innovation efforts in finding solutions to its clients' problems.

The connectivity cloud, the latest addition to Enterprise B's service offer, was born out of a need to change client's perception *vis-à-vis* Enterprise B's electronics. Since Enterprise B was using its own electronic components, clients saw that proprietary technology as a "black box". Enterprise B designed the connectivity cloud to show clients that Enterprise B's electronics was very open, much more open and accessible than that of Siemens or Allen-Bradley. Soon Enterprise B realized that they could use this tool to make clients' feel supported by the company in terms of services. Of particular interest were the clients of the Compact line as they tend to lack a thorough knowledge of the equipment they are buying. These clients have difficulties to determine whether a problem flagged by the machine through its automatic warning systems is serious or not, and to identify which is the right solution to that problem. The reasoning was

[59] Enterprise B's sheeters are capable of offering a precision of one tenth of a millimetre while cheaper Indian competitors that were serving this new market can only guarantee a precision of 1.5 millimetres.
[60] CDTI is the Spanish Government's Centre for the Development of Industrial Technology.
[61] Gaitek is a programme of the Basque Business Development Agency (SPRI) aimed at improving business competitiveness through the promotion of research, development and innovation for the development of new products.

that if the client feels supported and backed by the company, then it will be more inclined to purchase the equipment.

The connectivity cloud allows Enterprise B to monitor every single machine, collect data on their performance, the type of work they do, the weight, width, and format of the paper being cut, the quality of cut, the minor and major problems the machine has, etc. With this information Enterprise B is in a position to offer personalized services to its clients, such as remote maintenance services for most electronic problems. With all these information at hand, Enterprise B realized that the connectivity cloud could achieve other two important purposes. The first one is to collect large amounts of operational data that would allow the company to identify with great precision where the machines were having problems and determine areas of improvement. This information is immediately transferred to the R&D and technical departments and allows the company to make better products by applying knowledge about the performance of its machines in real situations over an extended period of time. Second, the connectivity cloud allowed Enterprise B to have an on-line, real time market study[62]. The company is now capable of knowing what is being produced with each one of its machines in the different countries and identify changes and patterns. This allows Enterprise B to make more accurate forecast of clients' needs and market changes. This is a very smart utilization of the technological tools available in the market to improve the company's offer, and none of Enterprise B's competitors is doing anything remotely similar

Last but not least, the connectivity cloud allows Enterprise B to initiate discussions with the client on possible machine adaptations for the specific work each machine is doing. This represents a further evolution of Enterprise B's offer: From a company focused on manufacturing a physical product, the company transformed itself into a company focused on the application of its strong R&D and design capabilities. Now, through the collection of information from each individual machine, the company is capable of identifying and forecasting clients' strategic or tactical moves. By using this information the company can help its clients in the identification of the best possible solution to make that strategic or tactical move more successful. The company moved from a situation where the client was telling the company what it needed, to a situation where the company identifies what the client needs and engages in a conversation of how to better address those needs. The business intelligence software tools the company has, and the ones it is developing, allow for the management of large amount of data to make this possible.

[62] Enterprise B's connectivity cloud collects information of every machine every five seconds.

***Capability to produce at the desired quality***

According to the model of chapter five, three processes shape this capability:

- *Development of quality standards*;
- *Development and implementation of quality control procedures*; and
- *Design of after sales service departments*.

Unlike some of its major competitors, Enterprise B has never had, nor is planning to get, any type of international quality certification[63]. There are two main reasons why Enterprise B has remained outside this trend. First, because its clients have never requested it, therefore there has never been market pressure to adopt them. Second, because it is the view of the Managing Director that international certifications say very little about the real quality of the company's offer as they have commoditized the concept of quality. The company took the time to analyse its offer, its components, and its expected performance, in order to internally develop an acceptable quality level based on clients' requirements, competitors' offers, and common industry standards. This analysis led to the development of its own quality standards and the implementation of procedures and control check-points at various stages of the projects' life cycle to keep quality within established limits. Enterprise B is very strict when it comes to the proper documentation and storage in the ERP system of all the findings resulting from these controls. Each stage in the project has predetermined performance indicators that are continuously monitored by the project leader. At the company level, management uses an adapted version of the balanced scorecard that allows the monitoring of all areas and processes within the company.

Understanding that quality is a multidimensional concept, Enterprise B has created product service departments, for the purpose of improving total quality. This department is equipped with standard policies and procedures for warranty servicing, repair, updates, upgrades, technical support, etc., and include the development and running of training programmes. When it comes to the provision of after sales services Enterprise B offers its clients a wide range of services that complete and add value to its offer. All the after sales services were designed with the purpose of adding value to the business' value proposition by answering to all possible needs and problems the client may have when using the equipment. The services Enterprise B offers are the following:

[63] Bielomatik GmbH is ISO 9001 and ISO 14001 certified.

1. *Connectivity cloud*: It allows the monitoring via tablet, smartphone or computer of all Enterprise B's machines installed anywhere in the world. The system enables the client to perform preventive maintenance operations, and Enterprise B to carry out remote adjustments to improve the machines' performance. Clients can access all technical information about its equipment, download software updates, and contact Enterprise B's technical service and commercial department directly. The connectivity cloud allows Enterprise B to anticipate enhancements to the machines, which minimises down-times and boosts the profitability of the clients' equipment.
2. *Maintenance contract*: It allow customers to receive the preventive maintenance plan recommended for each machine according to their specifications and expected conditions of use.
3. *Fixed price repairs*: Through this contract, the client settles a fixed price for certain maintenance operations which includes inspections by Enterprise B technical service team and the use of original Enterprise B spare parts.
4. *Training services*: Enterprise B provides its clients training services on the operation of the machine, its maintenance, including preventive maintenance, and safety-related issues.

In terms of the future evolution of Enterprise B's after sales services, the company realized it needs to become more competitive in the provision of services and spare parts. Enterprise B has more than 500 machines active all over the world, some of them more than 30 years old, and the company feels it cannot provide adequate assistance to all of them *vis-à-vis* their spare needs. By improving its web site to allow credit card payment, Enterprise B believes it will be able to reach a larger number of clients. In terms of the provision of after sales services they also need to change as the cost of sending an employee for a week to perform maintenance and repair services to the clients' facilities abroad has a cost of approximately € 7.000, and this is far too expensive. Al these issues will be addressed in the Strategic Plan 2.015-2.017.

***Capability to produce the desired quantities***

According to the manager, this was the production capability that was most affected by the international diversification strategy of the company. There are five main processes that would determine the production capacity of the business:

- *Production process engineering;*
- *Tool identification and design;*

- *Planning and scheduling work;*
- *Dispatching work;*
- *Design and install production facilities.*

Enterprise B designs and builds tailor made solutions for its clients, where no two solutions are the same, therefore the most adequate way of organizing production is by using one-off or project production systems. As a result of this, each client request is treated as an independent project, each project has one project leader, and each project leader could simultaneously manage more than one project. The project leader's responsibility is to coordinate the work of the different areas for a specific project, even though it does not have an executive role in any of the areas.

In 2.008 the company initiated the standardization of its processes and the modularization of the components it uses to produce its equipment. These changes generated enormous increments in productivity as it eliminated the need to re-learn how to assemble each new equipment as it was the case in the past. Modularization and standardization also reduced the cost of design, and reduced the average number of design hours per project from 2.500 hours to 1.500 hours, even when taking into consideration that the technology content of the equipment currently produced is higher than it was before.

Furthermore, modularization also simplified the assembly of the machine. Since Enterprise B's clients tend to have large, highly qualified maintenance teams, it is more and more common that the assembly on site is done by the client's staff with supervision from Enterprise B. This eliminated the need to send an assembly team to install each machine, and allowed Enterprise B to reassign these employees to other productive activities. The installation of the electronic components, which is the heart of the machine, is done by Enterprise B's experts.

Thanks to all these changes productivity increased drastically, and in the year 2.012 the company was able to produce 34 machines, when a year earlier with the same number of employees it produced only 17.

***Capability to produce at the desired time***

There are six generic processes that directly affect the business capability to deliver on time. Those six processes are:

- *Determining inventory requirements;*

- *Keeping stock;*
- *Purchasing and expediting;*
- *Internal logistics;*
- *Handling materials;*
- *Fulfilling freight operations.*

Currently the company subcontracts the manufacturing of components to partner enterprises, most of them local, therefore there is no need of manage inventories of production inputs or work in process. The cost of subcontracting reaches € 30 million per annum. Approximately 5% of all components procured by the company are sourced from China.

The merger in 2.008 of the two existing procurement departments and the improvement of internal procurement processes generated important cost efficiencies but also an important reduction in procurement times. The reduction in the procurement times, together with the fact that employees were devoting less time to assemble each machine as a result of the use of modular components, led to an important reduction in the delivery times the enterprise was able to offer its clients.

In some cases the design of some specific components is left to the supplier as they have proven to be better and more efficient than Enterprise B. Understanding that not everything needed to be designed in-house was an important change in the mind-set of the company that occurred in the last few years. Enterprise B realized that despite having the capabilities to design all the components of its equipment, there were specialized enterprises that could do the same quality work at a lower cost. Enterprise B's management understood that trying to be the best at doing everything and keeping the expertise in-house was not profitable, as it would require the company to undertake very large investments over time to sustain the technology levels required. An example of this is the development of longitudinal cutting components that had a production cost of over € 4.000 for Enterprise B, when Dienes, a renowned German manufacturer specialized in industrial knives was able to produce it for little over € 1.000. Another example is the computer vision technology developed by Enterprise B and able to spot stains in the paper at very high speeds. This feature was requested by clients on average once every three years. Enterprise B realized that keeping the technology alive in-house was very expensive, and that there was a supplier in the region that had the expertise and the required up-to-date technology to do it. The availability of technological centres and the rich industrial network of Gipuzkoa facilitates the identification of potential partners to subcontract for the design and manufacturing of certain equipment components.

Furthermore, modularization also allowed for the increase of the equipment's reliability as it reduced the number and nature of potential problems the machines could have. This improved understanding of the problems facilitated the identification and implementation of solutions. This led to the acknowledgement that there was no need to assemble and test each machine at Enterprise B's headquarter before it was shipped. Each machine is divided in subgroups, and only those subgroups are assembled at Enterprise B before shipping. Once at the client's premises the machine is finally assembled and tested. This contributed to further reducing the delivery time.

The process cycle time from the placement of the order to the delivery of the product was reduced from twelve months to six or seven months depending on the complexity of the project. Competitors are able to deliver in eight to nine months.

***Capability to produce at the desired cost***

Cost was the critical factor that determined the first international transaction, and even though its importance has changed over time, it is still an important dimension of Enterprise B's offer. The business ability to produce at the desired cost is closely linked with the existence and performance of the following processes:

- *Balancing production;*
- *Implementation of cost reduction programmes;*
- *Implementation of continuous improvement programmes;*
- *Developing maintenance systems;*
- *Estimating production costs;*
- *Location and site planning.*

Enterprise B is a company that permanently and systematically seeks to find new ways to improve its processes to make them more effective and more efficient. The standardization and improvement of procurement processes, and the standardization and modularization of components, resulted in a very important cost reduction as it allowed the procurement department to negotiate larger volumes and reduce the time to source components. The simplification of the procurement contracts due to modularization and the reduction in procurement time, gave more time to the procurement team to negotiate each order and secure better deals for the company. Thanks to these changes, the average cost of materials of a sheeter was reduced in 2.010 to € 750.000 from its peak in 2.008 of € 1.1 million.

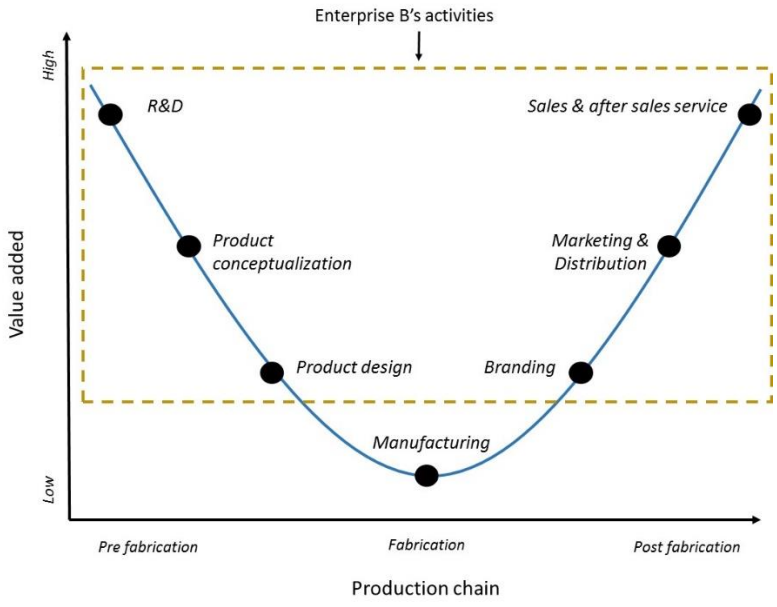
## 10.3 Assessment of Enterprise B's competitiveness

Shall Enterprise B be a competitive enterprise one should expect that the company has the ability to consistently achieve above normal rents, become the preferred supplier in the market, and be able shape future markets by continuously identifying business opportunities, and conceiving unique value propositions for existing, emerging, and imagined future clients..

Clearly Enterprise B is able to conceive a unique offer designed to address the specific needs of each client, and to adapt this offer to the changing needs of the clients. The inclusion of services adds value and flexibility to the offer, and allows the company to differentiate from its competitors. The characteristics of the offer, the focus on innovation, and the company's ambidexterity have allowed Enterprise B to lead the market and become a key player in its future evolution.

To determine whether Enterprise B is able to achieve above normal rents would require a thorough study of the financial situation of Enterprise B's competitors which is clearly beyond the scope of this work. Nevertheless, knowing that in a period of global economic crisis Enterprise B managed to achieve record profits and continuous sales growth is an indication that Enterprise B is a highly competitive enterprise. Furthermore, looking at the activities of the value chain that Enterprise B undertakes also provides evidence to suggest that the company has the characteristics of a competitive firm.

***Figure 18: Enterprise B in the smiling curve***




*Source: Own work*

All these has been possible thanks to the capabilities the company has been able to develop. Enterprise B's knowledge management capability provides the necessary inputs for the development of the business' strategic competence and the capability to configure an offer with the right combination of attributes. Operational capabilities, despite possible improvements, seem to be effective and efficient in developing the business' production and marketing competencies.

## 10.4 Sources of evidence

**Documentary evidence**

*Internal*

- Enterprise B's corporate web site;

*External*

- CIVEX database;
- Bielomatik's corporate web site;
- Will-Pemco's corporate web site;
- Iturrioz, C. and C. Aragon (2014), "Pasaban: Compromiso y conocimiento: Estrategias para el desarrollo de una empresa familiar", case study prepared for Antonio Aranzábal Foundation and Deusto Business School.
- KEMA (2012), "Industrial Sectors Market Characterization - Paper Industry"
- Multiple publicly available press and newspaper articles.

**Questionnaires and Interviews**

- Written questionnaire composed of open and multiple choice questions, and administered by email.
- Structured interview with Gustavo L., Enterprise B's Managing Director, following a pre-established sequence and with pre-determined evidence gathering objectives. Date: 31st October 2014. Duration: 2 hours.

**Direct observation**

- Visit to the company's headquarter office in Tolosa on the 31st October 2014.

**Physical and technological artefacts**

- Complete recording of the interview with Gustavo L., Enterprise B's Managing Director.

# CHAPTER 11: ENTERPRISE C

## 11.1 The origin and growth of Enterprise C

Enterprise C was founded in the city of Zarautz in 1.957 by the brothers Gervasio and Ruperto J.[64]. On those days the Spanish economy was closed and many products that were easily found in the rest of Europe were not available in Spain. The company initiated its activities as a little industrial workshop with three employees, supplying gears and transmission components to local enterprises. During the initial years the company benefitted from a large local market that was ready to buy anything they could produce. As it is common among young SMEs, the company focused on developing and applying its production capabilities to the design and manufacturing of gears and transmission components, while little attention was given to other capabilities.

As the years went by, the market changed drastically. A market that was once characterized by being closed and where demand exceeded supply, became an open and global market where supply was greater than demand. In the early 1.990s the portfolio of clients of Enterprise C was dominated by construction and machine-tool companies which were affected by the economic downturn putting the Spanish gear industry in dire straits. Many of Enterprise C's competitors were forced to close, and the need to diversify the portfolio of clients became evident. It was at this time that the second generation took over the control of the company.

During the transition period between 1.993 and 1.999 where the two generations were simultaneously involved in the company's operations, two important strategic decisions were made to respond to market changes. The first one was to add sophistication and upgrade the production processes in order to gain efficiency and improve the offer. The aim was to expand the client base by targeting new industrial sectors. The second decision was to start giving the necessary steps in order to strengthen the internationalization of the business. While both decisions were pursued, the degree of conviction with which they were implemented and their success was not alike.

Enterprise C decisively embarked on a series of capital investment initiatives aimed at improving its production capabilities that resulted in the acquisition of new equipment and the upgrade of its internal processes. These new equipment allowed the business to target sectors with high quality requirements such as the wind energy, aeronautic, and naval sectors. Also, in the year 2.000 the company inaugurated a new 3.500 square meters production facility to produce the

[64] For confidentiality reasons, the last name of the funders will remain anonymous.

totality of its output. The decision paid off and the number of clients and the turnover of the company increased on the years following these investments.

Following the first international transaction conducted in 1.975, the decision to further internationalize the business was conceived as part of a growth strategy aimed at diversifying risk and break free from the limitations imposed by the domestic market. Even though the firm has managed to secure a constant flow of international contracts, the level of investment required and the lack of capabilities constrained this initiative. One option to deepen the internationalization of the business was to follow the internationalization path of its clients, but this option was rapidly discarded as it would have been necessary to open production facilities in China. The company rejected this possibility on the grounds that the local know-how and technical expertise needed to run such a production facility was missing in China, and that such an investment would be very difficult to manage from Zarautz. Enterprise C is currently not considering any type of investment abroad.

In 2.009 the market for gears and transmission components entered in recession once again and the number of sales orders shrank. During the two years following the initiation of the crisis Enterprise C experienced a 40% reduction in sales, which forced managers to stop all capital investments that had been the engine of growth in the previous years. At this critical time the managers evaluated two options for the future of the company, both of them related to cost reduction: 1. to reduce the size of the company by half; or 2. to obtain important productivity improvements that would help secure new sales contracts by offering better prices.

Enterprise C prepared and got the approval for an ERE[65] but realized that given the nature and size of the company, the cost reductions would have been minimal if the company wanted to maintain its production capabilities and fulfil the orders it already had. The possibility of using the ERE deteriorated the work environment and further reduced productivity. Enterprise C decided that shrinking the company was not a viable option, discarded the use of the ERE, and started looking for alternatives to improve productivity. In mid-2.010 Enterprise C decided that instead of lay-off workers to cut costs, it will devote resources to improve their skills and motivation, and to improve vertical and horizontal communication across the company. The

[65] ERE is the Spanish acronym for "*expediente de regularización de empleo*", which is a redundancy plan by which the company temporarily suspends or permanently terminates the employment of a group of employees for business reasons.

objective was to obtain productivity gains that would allow the company to produce more, offer better prices, and sell more.

Enterprise C's products are currently being sold to a heterogeneous group of more than five hundred clients of different sectors (e.g. construction, machine-tool, consumer goods machinery, railways, wind and solar energy, aeronautic, shipbuilding, agriculture) and generate a turnover of approximately €3 million. Enterprise C direct exports account for approximately 15% of its production, and its main markets are: Germany and France, with sporadic sales to Switzerland, Austria, USA, and China. Since the company's products are components included in the products of other exporting enterprises, it is possible to say that approximately 95% of Enterprise C's production is destined to foreign markets.

## 11.2 An assessment of Enterprise C's competences and capabilities

### 11.2.1 Enterprise C's resource management competence

In terms of resource management, the focus of this dissertation is on trying to understand how the business manages its knowledge, and how that affects the business internationalization and competitiveness. For that reason, this section will place special emphasis on the activities the business undertakes to manage knowledge, and on how the management of other resources affects the business knowledge base.

***Knowledge for strategic decisions***

The interview and the questionnaire completed by the manager prior to the meeting, highlighted the lack of a system to gather strategic information and knowledge, and the lack of awareness in terms of what information and knowledge is required to make strategic decisions. Not surprisingly, management shows medium to low satisfaction levels with the quality of the available information and knowledge, except when it comes to information and knowledge related to its production operations which shows high levels of satisfaction.

There is only one initiative that could be associated to the way business manages its knowledge and information with strategic purposes. This initiative is the participation in different working groups formed and coordinated by Adegi, aimed at generating synergies between enterprises and discussing topics of interest for the future of the industry. The objective behind this participation is to strengthen the network of relationships with the business community, and to be updated on the latest developments that could affect the sector and could generate potential

business opportunities. These working groups address a wide arrange of issues such as creating a consortium of enterprises to target foreign markets, new techniques to improve the efficiency of the value chain, the joint design and piloting of prototypes and research projects, etc.

Over and above this isolated initiative, the enterprise lacks a structure designed to support the knowledge needs arising from the enterprise's growth and internationalization ambitions. There is no one fully or partially devoted to scan the market and collect information and knowledge for strategic purposes. Enterprise C's main sources of information and knowledge are publicly available to all competitors (i.e. newspapers, specialized publications, and television), therefore not conducive to the development of competitive advantage. Potential sources of VRIN knowledge and information, such as clients, suppliers, and employees are not approached when the business makes strategic decisions. The company devotes a lot of time and efforts reviewing and determining the relevance of the external data and information it gathers as in many instances they are of limited value. Furthermore, Enterprise C is unable to gather the necessary information about its competitors' successes and failures that would allow it to benchmark itself against them. Data and information used for past strategic decisions cannot be retrieved, and past strategic decisions are not documented. All these makes it difficult for the enterprises to adapt its strategy to a changing market environment by preventing it from assessing past decisions, learning from its mistakes, and improving the quality of its future strategic decisions.

The diagnostic tool of chapter seven allows us to put a numerical value to Enterprise C's ability to manage knowledge for strategic purposes, and to highlight critical improvement areas.

***Figure 19: Assessment of Enterprise C's knowledge management for strategic purposes***


*Source: Own work*

***Other initiatives affecting the management of knowledge***

As mentioned above, in an attempt to overcome the negative impact of the economic downturn, Enterprise C implemented a number of initiatives targeting the business culture and its human resources, but with a clear impact on the management of knowledge. These initiatives will be presented below identifying the dimension of knowledge management that is most affected by each one of them.

To improve interaction, coordination and information flow between departments, the company instituted in 2.012 **short weekly meetings**, lasting no more than 30 minutes, between the planning department and the production department. The work of these two departments is closely related, but there was no cross interaction between the employees of each department. A representative of the quality department is also present, as well as other representatives from other departments if needed. The objective of these meetings is to improve the relations between departments, improve employees' productivity, address coordination problems, and foster information sharing. The topics usually addressed during the meetings are:

- A recognition of the work undertaken by colleagues;
- The current situation in terms of work-load and the activities that will need to be performed during the following week;
- The distribution of work-load between work stations;
- Recommendations to improve the production processes;
- The planning of work shifts;
- Review of the status of occupational health and safety, as well as the environmental management activities.

All these topics cover the *transfer of relevant knowledge and information* for a number of critical operational processes for the business. Namely: *planning and scheduling work*, *balancing production*, *implementation of continuous improvement programmes*, and *development and implementation of quality control procedures*. All of them are critical processes to ensure the business has the capabilities to produce the desired quantities, at the desired cost, and to meet the quality requirements of the client. These short weekly meetings established a forum for regular interactions with open channels of communication and meaningful work-related content that became an important part of the way Enterprise C runs its operations.

Since new employees tend to lack the necessary knowledge and skills to perform specific production routines required to manufacture gears, they cannot be considered as fully operational from the day they join the company. To overcome this knowledge and skills gap, and when an employee needs to be replaced due to retirement, a new employee is hired eight to twelve months before the retirement date. During this period the new employee receives **formal training** inside the company to acquire the explicit technical knowledge it needs to perform production operations and to understand how the company works. Most vocational training schools teach students to produce gears using automated computer numerical control machines but not using conventional lathes. Enterprise C considers that it is very important for its new employees to develop the skills to produce a gear with conventional machines in order to better understand all the factors that may affect the final product. It is for this reason that **on the job training** is provided in order to develop this needed skills and acquire the required knowledge. Top management also receives external support, but for that purpose Enterprise C has hired an **external consultant** to deliver executive training to the management, and has also participated in training programmes for executives organized by Adegi.

Employee training does not end after the first year in the company, but it continues throughout their working life in the business. In order to develop the multidiscipinarity of each employee and demonstrate management's commitment to their continuous improvement, the enterprise has introduced a **mentoring programme** in 2.007. As part of this programme a **competency matrix** was developed for each employee with the aim of identifying strengths and weaknesses. Based on this competency matrix working pairs of workers are formed based on the knowledge and skill development needs of one, and the expertise of the other. This way the mentor can address the knowledge and/or skills gap of the pupil while performing their normal activities, and the pupil can acquire tacit knowledge that would have been otherwise difficult to get. This mentoring programme, although directed to the improvement of employees' skills has clear effects on:

- The *identification* of knowledge needs through the preparation of competency matrices;
- The *transfer* of tacit knowledge from mentor to pupil;
- The *generation* of new knowledge though the interaction between mentor and pupil;
- The effective *storage* of knowledge in pupils' mind; and
- The *application* of knowledge through the practical implementation of knowledge as necessary requirement for the transfer.

In 2.009 the company started making an **annual presentation to employees** about the financial and operational situation of the business, as well as management's strategic plans for the future. This is a clear example of management's commitment to improve communication and *transfer knowledge* to employees. This is a two way communication channel, and employees are entitled to submit proposals to improve the way things are being done in the enterprise. The objective of these annual meetings is to:

- Improve employees' trust *vis-à-vis* the management of the enterprise;
- Foster employees' commitment with the firm by promoting a sense of belonging and shared responsibility among employees (i.e. each employee is given certain degree of autonomy and they are fully accountable for the results of their work, and the group is collectively responsible for the fate of the company);
- Increase transparency;
- Address doubts and discuss issues of interest to the employees;
- Convey the message that key to the survival of the business are the collective efforts to strengthen the company's client orientation and improving effectiveness and efficiency.

As part of the operational processes renewal undertaken in 2.010 it was identified that production related problems, or problems related to the design of tasks and routines, were sometimes not reported by employees. In an attempt to capture this knowledge created during work processes that was being missed, and to codify it for later dissemination and use, in 2.012 Enterprise C started using **problem cards** where employees can explain the type of problems, either technical or relational, encountered while performing the activities they were given. These problem cards are then transferred to management, which together with the employee, seek a solution to the problem. The problem card servers also to register all actions taken to solve the problem and the result of the interventions. Only when the employee is satisfied with the solution and considers that the problem has been solved, the problem card is closed, otherwise it remains open until a solution is found. These problem cards serve as a way to identify and solve problems, as well as to keep a *repository of knowledge* about operational problems and tried-and-tested solutions for future use shall the company experience the same or a similar problem.

All these initiatives focus on the improvement of relations and/or increase in efficiency of the company's human resources, but they also have important effects on the way knowledge and information is being managed. Enterprise C has given priority to initiatives that improve the

management of operational knowledge and information, with the clear final objective of supporting the business' efforts to reduce costs and offer the clients the lowest possible price.

***Knowledge management enablers***

It is well understood that for knowledge management processes and initiatives to reach their objective it is not only necessary that they are properly designed and executed, but also that the environment in which they are implemented enables their success. Enterprise C has worked towards the spread of shared positive values among management and employees, and the improvement of trust and commitment of employees, both of which are critical success factors in the development of a corporate environment that favours knowledge creation and transfer.

In 2.010 the company created the **Values Committee** to address communication problems, in most cases linked to people's attitudes and pre-conceived ideas about each other. Little by little these factors eroded and destroyed communication channels between employees and ultimately affected the firm's productivity. The Values Committee was originally composed of four people: one representative from the quality team, one from the production department, one from management, and an external consultant. The goals of the committee were:

1. To identify, in a participative manner, the values by which all communication and interpersonal relations will be judged. These values are: respect, justice, and commitment;
2. Promote these values and make employees adopt them and adjust their behaviour;
3. Become a more cohesive organization, characterized by the commitment of its employees to meet productivity objectives, increase competitiveness, and secure the survival of the firm.

Other initiatives related to the improvement of the working environment resulted in capital investments in a new, more luminous, production facility and new, less noisy, production equipment to protect worker's health and safety. To build trust, improve working conditions, and reduce risk, management purchased an insurance policy that would secure the payment of all employees' salaries for eight months in case the company is forced to stop production.

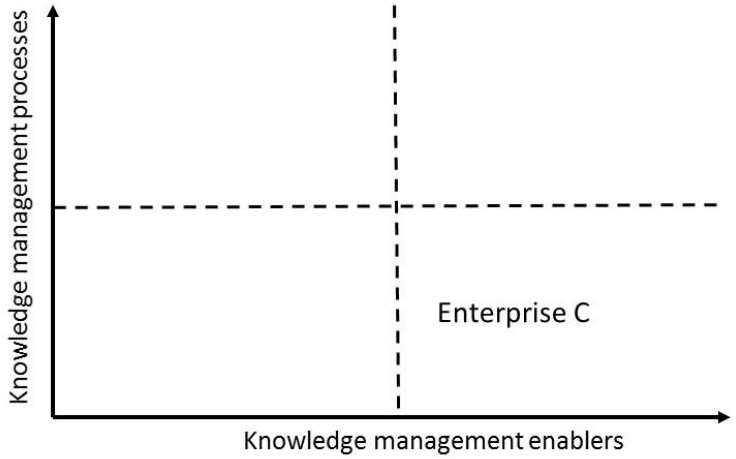
***Assessment of Enterprise C's knowledge management capability***

In terms of the maturity of the knowledge management capability, it would be unfair to characterize Enterprise C as company that has failed to acknowledge its importance or to

implement initiatives towards the efficient management of knowledge. None the less, it has focused more on the enablers of knowledge management and on the implementation of initiatives geared to the identification, development, and transfer of operational knowledge and information.

Contrary to what happens with the management of operational knowledge and information, there are no meaningful processes or initiatives in place that would feed knowledge and information for strategic decisions.

***Figure 20: Maturity of Enterprise C's knowledge management capability***




*Source: Own work*

With all the initiatives it has put in place, Enterprise C is creating a shared knowledge base to integrate the business' common intellectual capital. Even if the sharing of knowledge and information is currently purely operationally oriented, having a forum for creating and sharing new ideas is one of the key elements to build trust, generate cohesion, align actions, and eventually create new knowledge that could be used for future entrepreneurial actions.

### 11.2.2 Enterprise C's strategic competence

Looking at the world market for gears one could easily determine that most of the products are highly standardized, manufactured in large batches, and marketed globally as commodities. Those trying to escape from the commodity market, attempt to specialize their production in order to become part of a value chain (e.g. automotive, aeronautics, space industries, etc.) and to design an offer with higher service content.

The current positioning strategy of Enterprise C is similar to that of 50% of Spanish enterprises that are subcontracted by larger corporations to supply components (Confemetal, 2012): It attempts to ensure the best possible price (cost) and the shortest delivery time (time) of a product with a pre-specified quality level (quality). The client's design teams determines the characteristics of the products (attributes) and prepares the blueprints which are later handed to Enterprise C to proceed to the manufacture of the gear. Enterprise C attempts to differentiate from competitors by ensuring clients it can fulfil orders of different sizes, even orders of a single gear (quantity). On paper this is one of the most complex strategies as it requires the manipulation of four of the five production dimensions and the development of the respective production capabilities. In reality, the only production dimensions that could differentiate Enterprise C from its competitors are cost and quantity, as all other dimensions are set by the client (i.e. product attributes and quality levels) and not open to negotiation, or are standard to the sector such as time of delivery. Enterprise C is capable of performing all the processes needed for the production of the gear, with the exception of heat treatment that is subcontracted, and can offer its clients a final product or participate in any of the intermediate steps as per the client's requirements.

According to the manager, every four to five years the company goes through an exercise of reviewing its strategy to determine whether changes need to be made. The first important strategic revision occurred in the early 1.990s when the company faced its first significant shock due to crisis of its most important client, the machine tool sector. The lack of mechanisms to monitor the market and to identify new business opportunities constrained the identification of viable strategic options. Closing down the company was an option that was seriously considered. The second generation, now in charge of the operations of the company, decided to keep the business running and led the new strategy. The company decided to broaden its client base, which in principle seems to be a reasonable move, but failed to take steps towards the differentiation of the offer and the inclusion of value-adding services. On the contrary, the company consciously decided to focus exclusively on the manufacturing of gears, and by doing this it fell in the trap of price competition. This strategic shift marked the beginning of fifteen years of bonanza that coincided with the continuous high growth experienced by the sub-sector in the rest of Europe (Ecorys, 2012). These good results at the European level generate some doubts of whether the fifteen years of growth experienced by Enterprise C were the result of its strategic decisions, or of the inertia of the market combined with a well-developed production competence and good cost control management.

The last important strategic change was the decision to stop working with the automotive sector and to focus on sectors that required small batches. The automotive sector demanded the production of large batches, and the combination of small and large batches was complicated and not profitable for the company. Despite this important strategic revision, the company seems not to have succeeded in allowing the business to avoid or reduce the effects of economic downturns, to escape from the "generic" positioning of the sector, and to identify profitable business opportunities outside its core business. Given the market conditions prevailing at the time, where demand for gears was always growing and the number of producers limited, the company decided to remain within the boundaries of its original business of manufacturing gears and not to expand outside its limits.

When in 2.009 the crisis hit Enterprise C once again, strategic choices made in the past and the lack of mechanisms to gather strategically relevant information and knowledge confined the strategic options of the company to a very limited set of options. In the eyes of the Directors there was only one strategic option available: to pursue with the current strategy, and further engage in price competition. From a tactical point of view Directors saw only two alternatives: to downsize, or to cut cost through efficiency improvements. Due to the lack of a knowledge management capability geared towards the development of a proper strategic competence, Enterprise C failed to develop new capabilities and expand its opportunity set during the fifteen years of continuous growth. By 2.009 the company was fully constrained by its past strategic decisions and had no mechanism in place to expand its strategic options. Despite the clear difficulties, Enterprise C does not foresee any substantial change in its strategic positioning in the near future.

Because Enterprise C has managed to manufacture complete final products (even though not its own product line or brand), it can be considered as being part of the most evolved group of enterprises in the sub-sector. In terms of strategic evolution, the natural option would be to integrate new production technologies that would allow the company to manufacture more complex products outside the narrow scope of gear manufacturing (e.g. gearboxes, mechanical jacks, couplings, etc.). This would allow Enterprise C to add more value to the production operations of its clients, embed services as part of its offer (e.g. design of customized products, maintenance, training, etc.), and increase profit margins.

In terms of its organizational structure, Enterprise C has a flat structure with a Management Council and a clear distinction in the roles of the two directors in charge of operations. The Management Council is constituted by members of the family, and its role is to validate or reject

proposals made by the Directors, but decisions are made by consensus. On top of their responsibilities as members of the Managing Council, Ana Belén and Iñigo J., also have managerial responsibilities related to the operations of the firm. Ana Belén is the Managing Director in charge of administration, procurement, safety, and environmental issues, and her cousin Iñigo is the Industrial Director in charge of technical design, production, quality control, and sales. Together they manage almost 40 employees, most of them working in production-related activities and with vast experience in the company (on average more than 15 years). The internationalization of the business has had very little impact on the organizational structure of the business.

Unlike some of its competitors that develop their own proprietary technology (i.e. Talleres Guibe), Enterprise C is not strong in R&D. The company's innovation-related work is limited to the participation in sector-wide working groups mentioned earlier. Currently, Enterprise C is participating in a working group with other four enterprises that follows and contributes to the evolution of the maritime energy sector. As part of this effort Enterprise C is manufacturing prototype gears that could potentially be used underwater. Unfortunately, the participation in these working groups has not yet generated concrete business opportunities. The internationalization of the business has had very little impact on the R&D efforts undertaken by the business.

Enterprise C, as well as its closest competitors in the market for gears and transmission components[66], is a medium-size enterprise with formalized internal processes and a predominance of informal relations within the company and with outside stakeholders. Its growth philosophy has always been to favour controlled growth strategies that minimized risk exposure. While being medium-sized companies, competitors tend to be larger in size, have more financial muscle, and be more entrepreneurial[67] when compared with Enterprise C. The market has also witnessed consolidation through acquisitions[68] that may put extra pressure on market prices and force Enterprise C to rethink its growth strategy.

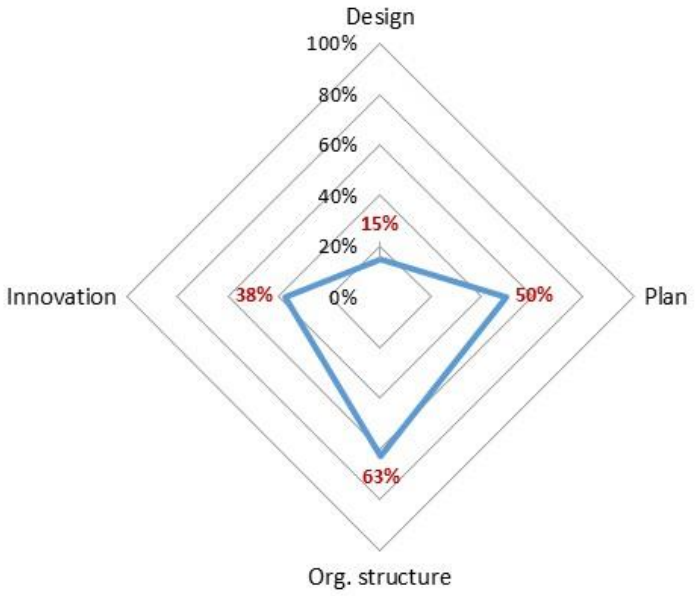
[66] Some of the competitors are: Engranajes Xubi, Talleres Guibe, and Engranajes Grindel. Competitors differ in size and the equipment they have, but tend work in a similar manner as Enterprise C (i.e. manufacturing a product as per the clients' specifications). In some cases competitors offer a broader array of products and include services as part of their offer.

[67] An interesting example of entrepreneurism is the case of Engranajes Xubi that out of the initiative to add services to its offer, created a new company to provide its clients with personalized assistance on preventive maintenance and repairs. The company's name is ESA Gear Service, and is fully controlled by Engranajes Xubi.

[68] In September 2.014, and following large investments in technical production and control equipment, Talleres Guibe was purchased by Goizper Power Transmission Solutions.

Using the strategic competence diagnostic tool presented in chapter seven, one can clearly see that there is substantial room for improvement in the way Enterprise C develops its strategic capabilities.

***Figure 21: Assessment of Enterprise C's strategic competence***




*Source: Own work*

Enterprise C's strategic competence is not well developed, particularly in terms of its dynamic capability to design a competitive strategy, which is not surprising if we recall the degree of development of the business' ability to manage knowledge for strategic purposes. The company has not managed to escape from the typical positioning of the average company in the subsector and it is still competing in prices, which is a sign that the enterprise has not managed to differentiate from its competitors. This shows serious deficiencies in the firm's ability to identify new profitable business ideas, to segment the market, and to identify and manipulate the key dimensions of the offer that would create a unique value proposition. Price competition could be a suitable strategy for a large company targeting mass consumption and using mass production systems, but certainly it is not for an SME with limited production and distribution capabilities.

Enterprise C is relatively strong when it comes to strategic planning and the definition of the most adequate organization structure. The fact that the company ranks highly in terms of strategic planning is because given the strategic positioning selected (i.e. lowest price and small batches), it is able to clearly identify the critical business processes responsible for the success

of the given strategy. Enterprise C has also managed to equip the business with an organization structure and a set of policies and procedures that meet the operational needs of a company.

While Enterprise C devotes some resources to conduct technical research, all its efforts are geared towards the identification of ways to improve its processes to gain overall efficiency, and not much is done *vis-à-vis* innovation to differentiate the offer. The needs of price competition (i.e. to constantly look for ways to cut costs and increase efficiency) are consuming the limited resources the company devotes to develop its strategic competence. This is one of the reasons why the company ranks low in terms of its innovation capability.

As a consequence of this underdeveloped strategic competence, Enterprise C has not managed to break free from path-dependency on its strategic decisions, which is one of the factors that had negatively affected its internationalization path, and keeps it in an embryonic stage. Some of Enterprise C's larger competitors have managed to expand their productive opportunity set and diversify the business by entering into other businesses in the vicinity of their original business (e.g. manufacture of gearboxes, hydraulic jacks, etc.), and add a service component to their offer (e.g. design of custom-made products and maintenance). On the contrary, Enterprise C is still in the same business it was at the time of its foundation, producing the same product, and engaging in price competition.

### 11.2.3 Enterprise C's marketing competence

Whether Enterprise C's marketing competence is strong or weak has to be seen in terms of the strategy it supports. Clearly the chosen strategy for the company does not require the development of a strong marketing competence, and it is because of this that Enterprise C's marketing competence is very weak. Having developed a marketing competence beyond the one that the company currently has would have been an ineffective and inefficient use of resources.

Before embarking in the individual analysis of the business' marketing capabilities, it is important to mention that when asked about the difference between marketing operations destined to domestic market and those destined to international markets, the manager said that they were practically identical.

***Capability to communicate***

Enterprise C's communication capability is certainly weak, and this is something that is acknowledged by the management but it is not a matter of concern. As per the model in chapter five, this capability is developed through three important processes:

- *Developing a brand name;*
- *Advertisement and promotion;*
- *Preparing sales material.*

Given the nature of its offer and its strategic positioning, Enterprise C has not had the need to develop a brand name. Although the company is well known in the sub-sector, this visibility should not be mistaken with active efforts to develop a recognizable brand name.

Enterprise C has a web page that uses to communicate and advertise to the world what the company does. Unfortunately, this web page is ill designed, provides very little information about the company and its offer, it does not allow to download product brochures or price lists, and the English version targeting international clients includes some translation mistakes. With all these deficiencies, the web page fails to convey a message to the clients that would prompt them to contact the company; therefore it fails to achieve its objective. When compared with the web pages of its competitors, Enterprise C's site ranks very low.

Last but not least, the company does not undertake any advertisement and/or promotion of its products or the company itself.

***Capability to obtain orders and secure sales contracts***

The capability to obtain and secure sales orders is mainly developed through three processes:

- *Prompting and responding to sales inquiries;*
- *Pricing and quoting;*
- *Negotiating.*

Enterprise C is an established company with almost sixty years in the market, and in most of the cases clients contact the sales department without being prompted by it. Furthermore, business-to-business deals are characterized by being long-term relationships and once the link has been established and Enterprise C has proven to be a reliable supplier, the client does not need to be reminded about the company's offer and will come back as long as the minimum

requirements of quality, time, and cost are met. Supplying gears to such demanding sectors as the automotive and wind energy sectors, serves as a signalling mechanism that tells potential new clients of the production capabilities of the business and induce them to request a quotation.

The company's policy is to never let a request unanswered, and once a request for quotation is received, it proceeds immediately to ask the client for the gears' blueprints and their technical specifications. By doing this, not only the sales department is in a position to prepare the best possible quotation, but it also reduces the possibility misunderstandings and allows the production department to fully understand the complexity of the order. The key variables in the quotation are the price and the time to deliver, which cannot be further negotiated once the quotation is issued. The only factor that may change the final price is a fluctuation in the cost of raw material.

When it comes to international markets, Enterprise C has mostly followed the same strategy it has for local markets (i.e. let clients come to the business rather than actively pursuing to boost international orders). Internationalization started as a result of unsolicited orders coming from Germany and France. These new clients were looking for cheaper reliable suppliers and they contacted Enterprise C either following a recommendation of other business partners located in Gipuzkoa, or as part of their own efforts to broaden their supplier base.

Five years ago, when the crisis hit Enterprise C, the company started to implement a new tactic to increase international sales and strengthen its position in European markets. Enterprise C started working with SPRI to identify and select a suitable sales agent in Germany. For different reasons, in most of the cases related to a mismatch between the company's culture and the candidates' profile, this effort was unfruitful. The company then initiated contacts with a young Basque entrepreneur residing in Germany, who had previously contacted the company but at that time Enterprise C was not ready to engage with him. After receiving favourable references from other enterprises, Enterprise C appointed him as its sales representative in Germany[69]. Due to the success of this initiative the company attempted to replicate it in France without much success yet. The success of the sales representative in Germany seems to be related to

[69] Despite his success in increasing sales volumes, and the importance of the German market in terms of international sales, Enterprise C's web page fails to provide the contact details of the sales representative in Germany. This is yet another piece of evidence that shows how weak Enterprise C's marketing competence is.

the person's personality and work style, rather than on a capability developed by Enterprise C to use sales representatives abroad.

***Capability to distribute***

Enterprise C sells all its production from the headquarter plant in Zarautz, with the only assistance of its sales agent in Germany, but without relying on a specific distribution channel. This capability has not been developed by Enterprise C, either for its domestic market nor its international markets, and is not envisaged to be developed in the near future.

### 11.2.4 Enterprise C's production competence

As in the case of the marketing competence, the strength of the production competence has to be seen in light of the strategy that helps to support. Given the chosen strategy, it could be said that the production competence is relatively strong and the company has done a good job over the years to develop an effective and efficient production competence. The manager of the business pointed out that the production operations destined to domestic and international markets were identical. All of the production dimensions that are critical for the domestic market are also critical in international markets, and the processes in place to serve one market or the other are the same.

***Capability to produce with the desired attributes***

Due to the nature of the business, this important dynamic capability is not present in Enterprise C at the moment, and it is not envisaged to be developed in the near future. The business capability to design and manufacture a product with the desired physical and functional attributes is mainly developed mainly through three processes:

- *New product design and prototyping;*
- *Product alteration and enhancement;*
- *Product discontinuation.*

As we have seen above, the attributes of the product and its technical specifications are pre-specified and given to Enterprise C at the moment of requesting a quotation. Consequently, Enterprise C has no influence on the characteristics of product that will be manufactured (i.e. it does not participate in the design of the gear) and only advises the client on issues related to the finishing of the product, the use of alternative materials or production techniques where the

company has specific knowledge. Enterprise C only needs to reassure the client that it has the technical capabilities to manufacture the product as per the provided blueprint. Furthermore, Enterprise C does not have its own line of gears that are mass produced and sold through intermediaries. Consequently, it does not have to worry about the product's life cycle and improvement as each gear produced is manufactured following clear and precise instructions from the client.

***Capability to produce the desired quantities***

There are five main processes that would determine the production capacity of the business:

- *Production process engineering;*
- *Tool identification and design;*
- *Planning and scheduling work;*
- *Dispatching work;*
- *Design and install production facilities.*

As mentioned earlier, in the year 2.000 Enterprise C inaugurated its new 3.500 square meters production plant with state of the art equipment and tools. The new plant and the new production equipment allowed the company to increase its volumes, improve the quality of its products, and ameliorate the health and safety conditions of its employees through improvements in luminosity and reduction of noise.

Production planning is made as per the client's specifications, which entails that the most effective way to organize production is by using a batch production system in which the gears are manufactured stage by stage over a series of workstations. There is no mass production and no stock of final products, and the production cycle only starts once the offer is accepted by the client. Batch production offers Enterprise C the necessary flexibility and capability to produce small batches, but at the same time it causes some inefficiencies as equipment must be stopped, re-configured, and its output tested before the next batch can be produced. This generates idle time between batches and increases the cycle time.

Given that Enterprise C, and most of its Spanish competitors, are SMEs with limited production capabilities, they find it difficult to fulfil large orders and orders that require large number of different types of gears. In order to solve this problem, Enterprise C has established informal partnership agreements with a group of competitors to be able to jointly accommodate these types of orders by distributing the work among them once the order is secured. This is a clear

example of how good strategic resource management, in this case networks and relationships, helps develop the capabilities of the firm.

***Capability to produce at the desired time***

The delivery time for an order of average size and complexity is approximately two months, and it can go up to four months if the complexity of the gear is high. During the discussion with the manager it was clear that clients perform a close monitoring of the workload of all gear manufacturers and place orders to one or the other based on this, and in many cases they split an order among various manufacturers to speed up delivery.

There are six generic processes that directly affect the business capability to deliver on time. The nature, strategy, size, and operational structure of the business will determine which of these processes will be present and which will be critical. Those six processes are:

- *Determining inventory requirements;*
- *Keeping stock;*
- *Purchasing and expediting;*
- *Internal logistics;*
- *Handling materials;*
- *Fulfilling freight operations.*

Enterprise C does not keep a stock of finished products, and only keeps a small stock of standard raw material to be used for internal purposes (i.e. to produce gears consumed in the production process or other components for its own production equipment) but not for the manufacturing of clients' orders. All raw material, when not provided by the client, is purchased once the quotation has been accepted by the client.

Key for the development of this capability is to maintain good relations with its four main steel suppliers. For this reason Enterprise C has devoted time and resources to build strong relationships with local suppliers based on trust and mutual collaboration. Nowadays approximately 80% of all the raw material and equipment sourced by the firm comes from local suppliers that have a long history of working with the company. In order to maintain these good relations and help strengthen the financial stability of its suppliers, Enterprise C has instituted a policy by which it extends the same payment period to its suppliers that the company request to its international clients (i.e. 45 days). By doing this, Enterprise C contributes to the financial stability of its suppliers who are used to the Spanish standard payment delay of 60 days.

The physical distribution of the final product to the client's premises is always determined by the client and clearly specified in the sales contract. Since Enterprise C does not have the resources or capabilities to distribute products, it is the client that has to determine which transport or freight forwarding company will take care of the transport of the product from Enterprise C's production plant to its final destination. The same rule applies for international sales. The INCOTERM used in international transactions is EXW (ExWorks), which requires Enterprise C to have the final product packed and labelled and ready for the freight forwarder company to pick it up from Enterprise C's production plant. This INCOTERM is most commonly used in intra-European trade as there is no customs clearance requirement, and since the bulk of Enterprise C's exports are destined to European clients it seems that the selection of INCOTERM is correct.

Of the six processes listed above, the only one that seems critical for the development of this capability is that of *purchasing and expediting*. Other processes either do not exist (i.e. *internal logistics*), exist in a very rudimentary form (i.e. *determining inventory requirements* and *keeping stock*), or are directly or indirectly performed by the client (i.e. *fulfilling freight operations*).

***Capability to produce at the desired quality***

According to the model of chapter five, three processes shape this capability:

- *Development of quality standards*;
- *Development and implementation of quality control procedures*; and
- *Design of after sales service departments*.

In response to market demands, Enterprise C places high importance on the quality of its products. A characteristic of the machine tool sector is that suppliers need to comply with minimum quality standards if they want to be in a position to compete for the market. The nature of their clients' activities demand enterprises like Enterprise C to consistently manufacture products that comply with the desired requirements following standard production methodologies. In that sense, the implementation of quality standards and the acquisition of internationally recognized quality certifications are *sine qua non* conditions to enter the market.

In 1.997 Enterprise C starts acquiring international quality certifications with the ISO 9001, followed by the OHSAS 18001 for occupational health and safety management; and finally the ISO 14001 for environmental management. This last certification was obtained in part because

of internal corporate social responsibility motives, but also because of external pressure as it is usually one of the criteria to fulfil in the clients' supplier selection process, even if the production activities performed by Enterprise C have very little environmental impact[70].

Enterprise C has two full time employees devoted to implement the Quality Plan of the business, to perform quality controls procedures, and to train production personnel in quality related matters.

Unlike some of its larger and more sophisticated competitors (i.e. Engranajes Xubi and Talleres Guibe), Enterprise C does not offer after sales services such as maintenance, repair, retrofitting or installation to its clients. In the cases where a gear malfunctions as a consequence of production-related deficiencies, Enterprise C changes the gear at no cost to the client. This replacement service is provided to clients even after five years of the purchase of the gear.

***Capability to produce at the desired cost***

A priori, and given the positioning strategy of Enterprise C, one would be inclined to believe that this should be one of the most and best developed capabilities within the firm. The business ability to produce at the desired cost is closely linked with the existence and performance of the following processes:

- *Balancing production;*
- *Implementation of cost reduction programmes;*
- *Implementation of continuous improvement programmes;*
- *Developing maintenance systems;*
- *Estimating production costs;*
- *Location and site planning.*

The cost structure of Enterprise C is similar to that of all enterprises that manufacture gears and transmission components. On average the cost of production inputs, including the fuel and energy needed to run production equipment, represent 30% of turnover, personnel cost represents 35% of turnover, and the amortization of equipment represents approximately 15% of total turnover. The remaining 20% incudes taxes and the profit of the company.

[70] This shows the high importance placed by leading firms on corporate social responsibility (CSR), and how that is pushing SMEs to implement their own CSR initiatives.

Costs are set by the market and Enterprise C has no influence over them. Steel is bought at spot market prices, and even though they tend to be very stable in time and across suppliers, the company has no bargaining power to affect them. The price of energy and other utilities is regulated by the national government, as well as the amortization of equipment that is determined by strict accounting rules. This implies that all cost reductions and price reductions should be based on efficiency improvements. This is also very difficult to achieve as all companies in the sector use the same inputs and the same or very similar production equipment, therefore they can hypothetically all achieve similar efficiency levels. In order to avoid price reductions to result from profit margins drops, Enterprise C has embarked in several initiatives to improve productivity and the working environment, hoping this will translate in efficiency gains that would have a positive impact on the price it can offer to its clients.

Some operational decisions not initially related to cost reduction, such as the decision of not keeping stocks of raw material and finished products, have had a positive impact on the cost structure of the business. The way Enterprise C attempts to reduce the cost of its manufacturing activities is closely related to the way it manages some of its processes, including those related to other capabilities. The company expects to reduce costs by:

- Procuring raw material that is easier to transform (*implementation of continuous improvement programmes* and *purchasing and expediting*);
- Procuring cutting tools of better quality and longer life cycle; and shaping tools that are more flexible, precise, robust, and faster in order to reduce the production lead time and obtain gears of better quality (*tool identification and design*);
- Increasing the skills and motivation of its employees (*knowledge and human resource management processes*)

## 11.3 Assessment of Enterprise C's competitiveness

Given the high mortality rate of SMEs and the numerous crisis and economic downturns the company had to go through, it is evident that the company has managed to achieve some degree of success by adapting itself and finding solutions for the challenges it faced. Despite the success in securing the survival of the company, this work is not interested in the factors that ensure survival, but on the factors that drive competitiveness of SMEs.

As per the definition of competitive advantage given in chapter one we should be looking at whether Enterprise C has the ability to consistently achieve above normal rents, become the

preferred supplier in the market, and be able shape future markets by continuously identifying business opportunities, and conceiving unique value propositions for existing, emerging, and imagined future clients.

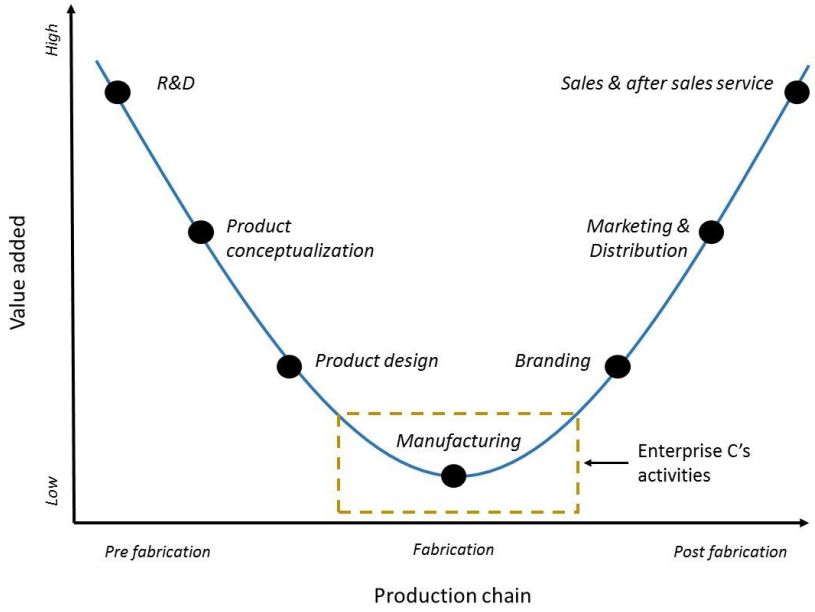
It is clear that Enterprise C lacks the minimum requirements to be considered a competitive enterprise. The fact that the company is submerged in price competition precludes it from being able to consistently achieve above normal rents, in fact the opposite happens and profit margins are very small. All its production capabilities are focused on the production of a standard product that is being sold to whoever wants to buy it. There is no active quest of new business opportunities or new clients (with the exception of the sales representative in Germany), nor the intention to add sophistication to the offer in such a way as to differentiate it from competing offers.

Enterprise C has not been able to acknowledge that they don't sell what they produce, and this is a major impediment to achieve competitiveness. What Enterprise C produces and what it sells are two different things. The company produces gears but sells its production capabilities to larger firms. A client that identifies its own needs, designs the product that would address those needs, prepares the blueprints, and procures the raw material to manufacture it, has only one decision left to make: whether to manufacture the product internally or to subcontract its production. The decision the client makes is not about which gear to buy, but whether it should develop the production capability, or to buy the services of someone who already has these capabilities. This way, Enterprise C is better understood when seen as a service-provision company rather than a manufacturing company.

Enterprise C has been subcontracted by its clients to perform the less critical, and less value-adding production-related operations of gear manufacturing. A key element that confers a product its value are its attributes, and the ability of those attributes to meet clients' needs. The design of the products and the identification of the attributes is done by the client. Critical to determine the quality of the product is the quality of the raw material it is made of, and in many instances raw material is procured by the client. Enterprise C is only subcontracted to perform routine operations leading to the transformation of raw material into a finished or semi-finished product as per the clients' specifications. This arrangement is certainly beneficial for the clients as they have transferred to Enterprise C part of the risk associated with their business. Enterprise C is responsible for making the necessary investments in equipment, conducting maintenance operations, managing suppliers when clients don't provide the raw material, performing quality controls, and dealing with human resources issues. Competitiveness is

closely related to value addition, and because of that, the *smiling curve* helps us determine Enterprise C's competitiveness.

***Figure 22: Enterprise C in the smiling curve***




*Source: Own work*

Enterprise C's competitiveness can be understood by looking at the dynamic capabilities it has been able to develop. The company has failed to properly develop third and second order dynamic capabilities with the right morphologies. These capabilities would have helped the company to understand the business it is in, its limitations, and to develop the ability to mutate and reinvent itself over time. It is important to acknowledge that as important as the morphology of each individual process or initiative, is the way all the processes and initiatives complement and synergize with each other. This case shows that isolated knowledge management initiatives, such as the participation in working groups with the aim of gathering relevant knowledge for strategic purposes, fail to have a meaningful impact. On the contrary, when interconnected knowledge management initiatives are designed and put in place with a clear purpose and in such a way that they complement each other, results are important for the development of a specific capability. An example of this are the various initiatives put in place to improve operational efficiency.

The business strategy that resulted from a weak strategic competence and an inadequate knowledge management capability has precluded Enterprise C from developing first order dynamic capabilities related to product adaptation and/or the development of non-physical assets (e.g. proprietary technology and patents) that could have been useful to differentiate the business. On the contrary, and from a strategic point of view, the Enterprise C of today

resembles very much the Enterprise C of 1.957, and even when going through difficult times, the company has not considered strategic shifts and all proposed solutions were confined within the narrow scope of a gear manufacturing business. The company has failed to develop a strategy-focused knowledge management capability which prevented the company from exploring business opportunities outside its core business and to identify more adequate positioning strategies.

## 11.4 Sources of evidence

**Documentary evidence**

*Internal*

- Enterprise C's corporate web site;

*External*

- CIVEX database;
- Engranajes XUBI's corporate web site;
- Talleres Guibe's corporate web site;
- Engranajes Grindel's corporate web site.
- Narbaiza, L. and C. Aragon (2009), "Herramientas y prácticas de la Responsabilidad Social de la Empresa", case prepared for the 6th Congress of the Association for the Development of Education and Research on Corporate Social Responsibility (ADERSE), 23-23 January 2009.
- Confemetal (2012), "Estudio de Competitividad del Sector Industrial del Mecanizado en España – Proyecto Aviva".
- Ecorys (2012), "An introduction to Mechanical Engineering: Study on the Competitiveness of the EU Mechanical Engineering Industry", Contract of Sectoral Competitiveness Studies – ENTR/06/054.

**Questionnaires and Interviews**

- Written questionnaire composed of open and multiple choice questions, and administered by email.

- Structured interview with Ana Belen J., Enterprise C's General Manager, following a pre-established sequence and with pre-determined evidence gathering objectives. Date: 16th October 2014. Duration: 2 hours.

**Direct observation**

- Visit to the company's headquarter office in Zarautz on the 16th October 2014.

**Physical and technological artefacts**

- Complete recording of the interview with Ana Belen J., Enterprise C's General Manager.

# PART THREE

# CHAPTER 12: RESEARCH CONCLUSIONS

## 12.1 Enterprises' comparative analysis

As pointed out by Yin (2013), there are few fixed formulas or cookbook recipes to guide the analysis of case study evidence. A good starting point in the analysis of the evidence is to manipulate the data in search for patterns, insights, or concepts that could throw some light into the subject under study. This chapter will compare the three enterprises studied in order to identify common structural characteristics and behavioural patterns. Two of the enterprises, Enterprise A and Enterprise B, allow for literal replication as they share key business characteristics, performance drivers, and risks. The remaining company, Enterprise C, while active in the same sector and affected by the same political, regulatory, and economic environment is not comparable and will be used for theoretical replication.

The comparative analysis will be guided and structured by the model presented in chapter five, which will play a key role in the examination of the evidence collected. The model, built on the basis of deductive reasoning, will determine the key areas of analysis and will help to organize the data obtained as part of the fieldwork. Then, the rules of logical inference[71] and analytic induction[72] (Znaniecki, 1934) will be applied to determine which descriptive inferences or implications are supported by the data. This will prove fundamental to answer the three research questions that inspired this work, and to allow an analytic generalization (Yin, 2013) of the results obtained.

### 12.1.1 An analysis of the offers

A key component in the definition of competitiveness given in chapter one is the ability of the business to conceive a unique value proposition for existing, emerging, and imagined future clients, which allows it to become the preferred supplier and to shape future markets. This will be the starting point of the analysis, as all the activities the business undertakes are expected to contribute to achieve this objective. The characteristics of the businesses' offers will provide a first indication of whether the three enterprises analysed in this work are succeeding or not.

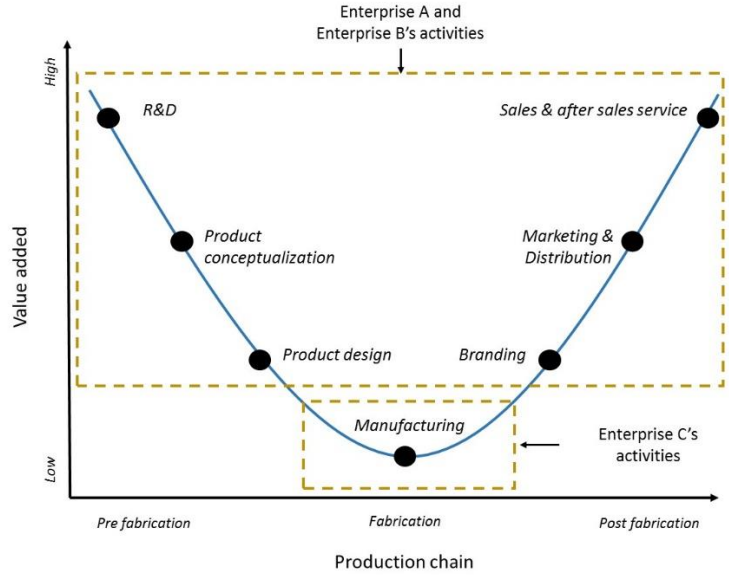
A first look at the generic activities within the value chain that the enterprises currently undertake shows that the larger and more internationally active enterprises (i.e. Enterprise A

[71] Please refer to Annex 2 for a brief discussion of the rules of logical inference.

[72] Analytic induction is a research logic originally conceived as an alternative to statistical sampling methodologies, and calls for the progressive redefinition of the phenomenon to be explained as evidence is gathered and analysed.

and Enterprise B) undertake activities with high value-added content, while the smallest and mostly domestic enterprise (i.e. Enterprise C) focuses on low value-added activities (Figure 23). This has not always been the case. By understanding the evolution of the offers over time it is possible to get important insights on the businesses' strategies, growth paths, and the sources of their business success or lack thereof.

***Figure 23: Enterprises' activities in the smiling curve***




*Source: Own work*

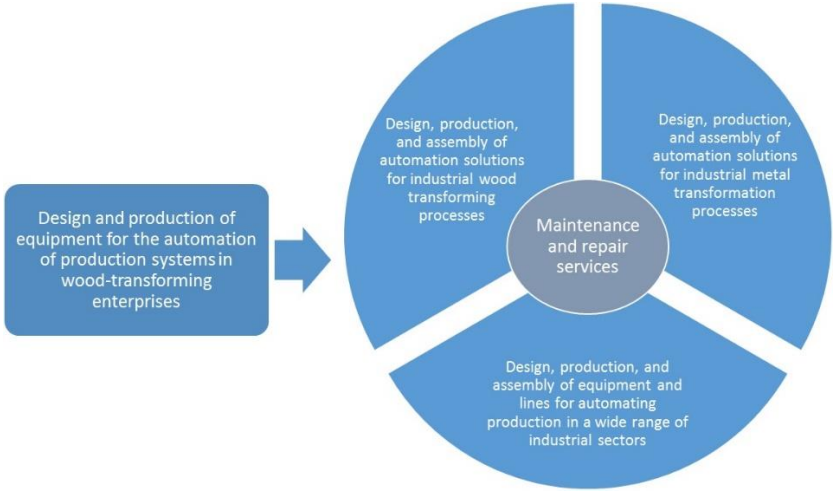
All three enterprises initiated their operations performing low value-added activities related to the manufacturing of equipment or production components. Over time the technical complexity and quality of the offers improved allowing the businesses to grow. These improvements in the offers signified important milestones for the companies but did not represent an alteration of the offers' essence which remained unchanged. It was not until the crisis hit the companies that they faced the dilemma of what to do with the offer and how to shape the business' future.

The first oil crisis and the opening of the Spanish economy was a shock for the three enterprises. Enterprise A and Enterprise B rapidly recognized the threat, and acknowledged that the share of value added in manufactured products was shifting from the fabrication stages to pre and post-fabrication services (i.e. R&D and design on the one hand, and after sales services on the other hand). Through adequate strategic choices the companies managed to create new opportunities for their businesses and to adapt to the new environment. In the late seventies, both enterprises acknowledged the need for change, and both opted for a similar path of diversification, internationalization, and value addition. Enterprise C failed to see this fundamental change in the market and remained focused on the manufacturing of its offer.

Enterprise B initiated R&D activities leading to the development of its proprietary electrical components, which were critical for the internationalization strategy. This was an important milestone in the life of the company as it was the first time the company used its internal knowledge to develop new prototypes that were outside the boundaries of what it had done until then. This was the starting point for a substantial strengthening and upgrading of the business' innovation capability, which would later become a distinctive characteristic of the business. Enterprise A's approach was slightly different. While still focusing on international markets and innovations, the company started exploring new markets outside the wood-transforming industry where its capabilities could be used. Little by little Enterprise A and Enterprise B started to subcontract the production of equipment to partner companies, and to devote more resources to the conceptualization and design of the offer. The technical complexity and the versatility of the offers increased over time, increasing their value and their ability to address changing clients' needs. Nowadays these enterprises entirely subcontract the production of the equipment they sell, and they focus on activities with high value-added and high profit margins such as R&D and design. These changes, which could be mistaken by operational adaptations, represent a very important shift that shaped the future of the two enterprises. As time went by, the two enterprises mutated from being strictly manufacturing enterprises, to offer high value-added services and perform no manufacturing operations. Today, the offer of both enterprises is not product or sector specific, but is built around the unique knowledge and capabilities of the enterprises, and its application to address clients' unmet needs and solve their problems.

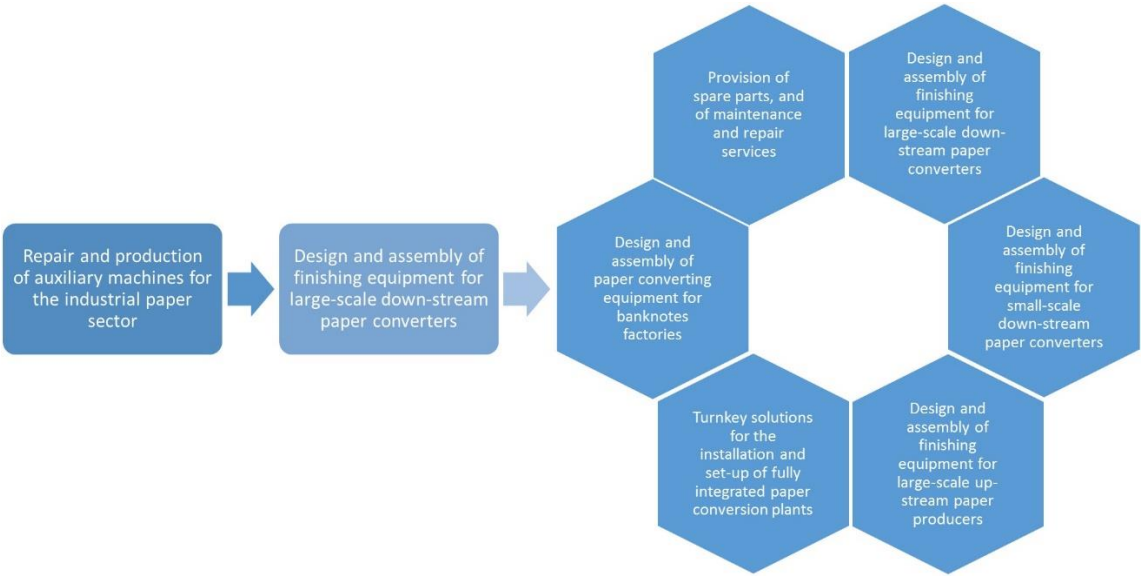
The figures below show the evolution of the offers of Enterprise A and Enterprise B.

***Figure 24: Evolution of Enterprise A's offer***




*Source: Own work*

***Figure 25: Evolution of Enterprise B's offer***




*Source: Own work*

Enterprise C was the slowest to react to the drastic market changes. Major adaptation of the business' operations only started in the early nineties of the past century, at the same time the company was embarking in its first generational change. Looking back, it is possible to argue that although the diagnostic of the situation made at the time seemed correct, it was certainly incomplete, and the solutions identified and the implementation priorities were inadequate. The strategy followed by Enterprise C was to focus on the production of small batches and achievement of maximum efficiency gains through important investment in equipment and infrastructure to compete in prices. Client diversification through internationalization was stated as an objective but never vigorously pursued, therefore it was less successful than the diversification of the domestic client base. As a consequence of these strategic and operational decisions the offer of the business did not evolve, although its quality improved and costs fell. The offer that Enterprise C takes to the market today is essentially the same it took to the market in 1.957 with the obvious improvements in quality and costs resulting from the investments made in production facilities and equipment.

### 12.1.2 Comparative strategic competence development

The evolution, or lack thereof, of the enterprises' offers is the result of the strategic decisions made by managers. These decisions were initially triggered by external factors, and shaped by the firms' knowledge base and the managers' preferences. The table below isolates the most important strategic positioning dimensions of each offer. In all cases, the selected positioning

dimensions guided the capability development efforts of the three companies. It is important to mention that none of the enterprises analysed made an explicit difference between domestic and international markets, and did not prepare an independent strategy to enter those markets.

***Table 42: Comparative strategic positioning***

| | Cost | Time | Place | Quantity | Quality | Attributes | Brand name |
|---|---|---|---|---|---|---|---|
| Enterprise A | | | | | | X | X |
| Enterprise B | | | | | | X | |
| Enterprise C | X | | | | | | |

*Source: Own work*

As shown by the model of chapter five, an adequate development of the dynamic capabilities constituting the business strategic competence is crucial for the success of the business. Table 43 and Figure 26 show the results of the competence diagnostic assessment performed to the three enterprises following the methodology and tools described in chapter seven.

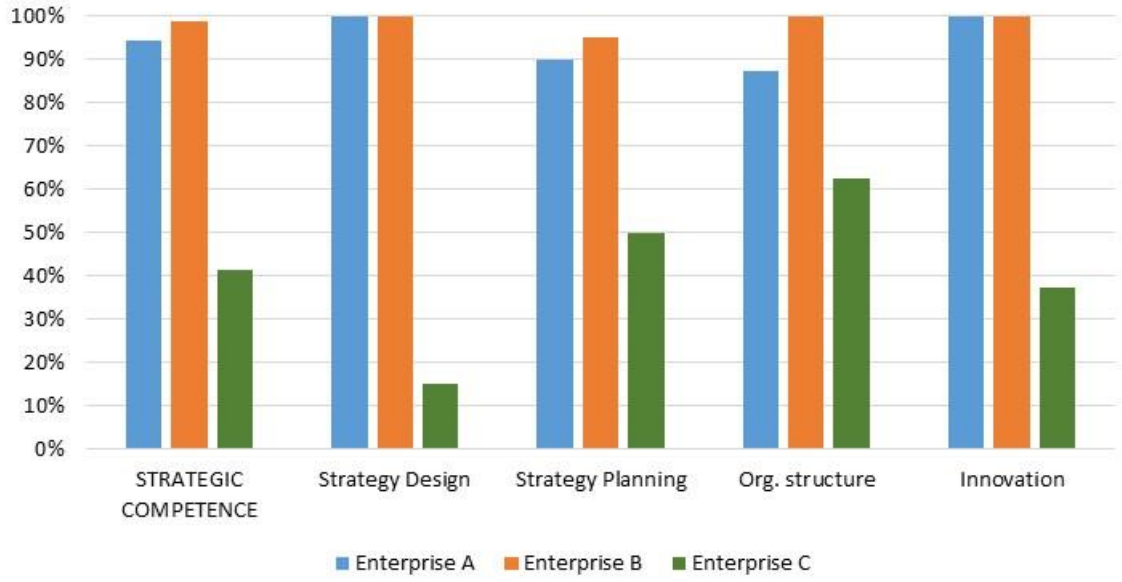
Enterprise A and Enterprise B, have reached similarly high levels of strategic competence development (99% and 94% respectively) while Enterprise C's strategic competence is notoriously weak (41%). This pronounced difference in the development of the strategic competence could certainly be responsible for the relative strategic inertia of Enterprise C, and the dynamicity of Enterprise A and Enterprise B.

***Table 43: Comparative development of strategic competence***

| | Enterprise A | Enterprise B | Enterprise C |
|---|---|---|---|
| ***Strategic competence*** | ***94%*** | ***99%*** | ***41%*** |
| **Strategy design** | **100%** | **100%** | **15%** |
| Generation, evaluation, and filtering of business ideas | 100% | 100% | 0% |
| Market identification | 100% | 100% | 25% |
| Market segmentation | 100% | 100% | 0% |
| Segment selection | 100% | 100% | 25% |
| Offer delineation and positioning | 100% | 100% | 25% |
| **Strategy planning** | **90%** | **95%** | **50%** |
| Identification of critical business processes | 100% | 100% | 100% |
| Preparation of strategic and operational plans | 100% | 75% | 25% |
| Handling risk and uncertainty | 75% | 100% | 50% |
| Periodic strategy update and adaptation | 100% | 100% | 0% |
| Impact assessment | 75% | 100% | 75% |
| **Org. structure** | **88%** | **100%** | **63%** |
| Developing organizational structures | 100% | 100% | 50% |
| Dev. policies, systems and procedures for adequate governance | 75% | 100% | 75% |
| **Innovation** | **100%** | **100%** | **38%** |
| Conducting basic and technical research | 100% | 100% | 25% |
| Capability dynamization | 100% | 100% | 50% |

*Source: Own work*

***Figure 26: Comparative development of strategic competence***




*Source: Own work*

To better understand the impact of competence development differentials on business competitiveness, it is necessary to look into the dynamic capabilities and processes that constitute the strategic competence. Two dynamic capabilities are notoriously weak at Enterprise C: the capability to design a business strategy (15%), and the capability to innovate (38%). Coincidentally, these two capabilities show the highest level of development (100%) at Enterprise A and Enterprise B. While the five processes that constitute the business strategy design capability are being performed at their peak at Enterprise A and Enterprise B, their performance level do not surpass 25% at Enterprise C. Similar differences could be found when looking in detail to the processes that confer the business its capability to innovate.

These findings are perfectly in line with what could have been expected by looking at the evolution of Enterprise A's and Enterprise B's offers. Strategy design is nothing but the identification of a group of potential clients with similar unsatisfied needs, expectations, and purchase behaviour; and the crafting of a unique offer that would meet those needs better than the competition could do it. The distinctive characteristic of Enterprise A's and Enterprise B's offers is their unique attributes, engineered to meet clients' needs and expectations through the design and development of innovative solutions. In order to be able to do this, the two companies have developed capabilities that allow them to fully understand their clients' expectations and needs, and to tailor-design an offer to cater for those needs.

Enterprise C manufactures a standard product as per the blueprints provided by the client, no matter who the client is. This is the expected behaviour of a company that lacks a well-developed strategy design capability and a well-developed innovation capability. Enterprise C is incapable of conceptualizing a new product that would address its clients' needs simply because the company does not have the means to independently determine latent or future needs, and to differentiate clients based on their specific needs. Clients approach Enterprise C with a very specific manufacturing need, and the only assessment the company needs to make is whether it has the production capabilities to deliver as per the clients' specifications.

A look at the relative capability development between Enterprise C and the other two enterprises offers a similar picture, but it further stresses the development gap in the two aforementioned capabilities. While Enterprise C's strategic planning capability and its capability to design an organizational structure are relatively well developed when compared with the other two companies, the capabilities to design a business strategy and to innovate are well below the development levels of Enterprise A and Enterprise B.

***Table 44: Relative strategic competence development***

| | Enterprise C vs Enterprise A | Enterprise C vs Enterprise B |
|---|---|---|
| ***Strategic competence*** | ***44%*** | ***42%*** |
| **Strategy design** | **15%** | **15%** |
| Generation, evaluation, and filtering of business ideas | 0% | 0% |
| Market identification | 25% | 25% |
| Market segmentation | 0% | 0% |
| Segment selection | 25% | 25% |
| Offer delineation and positioning | 25% | 25% |
| **Strategy planning** | **56%** | **53%** |
| Identification of critical business processes | 100% | 100% |
| Preparation of strategic and operational plans | 25% | 33% |
| Handling risk and uncertainty | 67% | 50% |
| Periodic strategy update and adaptation | 0% | 0% |
| Impact assessment | 100% | 75% |
| **Org. structure** | **71%** | **63%** |
| Developing organizational structures | 50% | 50% |
| Dev. policies, systems and procedures for adequate governance | 100% | 75% |
| **Innovation** | **38%** | **38%** |
| Conducting basic and technical research | 25% | 25% |
| Capability dynamization | 50% | 50% |

*Source: Own work*

As mentioned earlier, all strategic capabilities are intensive in the use of knowledge, therefore, the next logical step would be to find evidence of dissimilar knowledge management capability development levels, and link them to differences in the development of the strategic

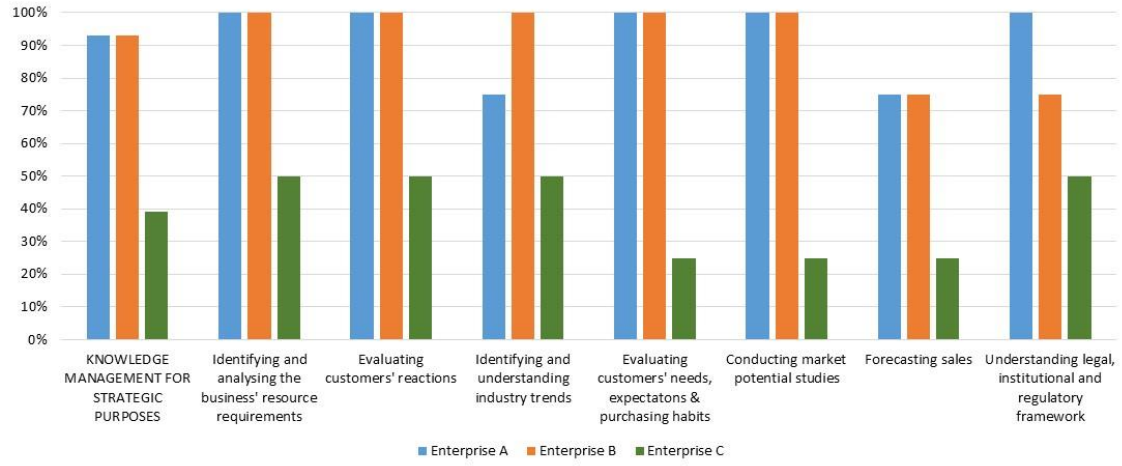
competence. The notion of knowledge-based competitive advantage requires the business to be able to identify and collect all the knowledge it needs at any given time for its competitive positioning. The required knowledge should be a mix of idiosyncratic internal knowledge and relevant external knowledge from the environment. Table 45 and figure 27 show the degree of development of the different processes that confer the business its capability to manage knowledge for strategic purposes.

***Table 45: Comparative development of knowledge management capability***

| | Enterprise A | Enterprise B | Enterprise C |
|---|---|---|---|
| **KNOWLEDGE MANAGEMENT FOR STRATEGIC PURPOSES** | **93%** | **93%** | **39%** |
| Identifying and analysing the business' resource requirements | 100% | 100% | 50% |
| Evaluating customers' reactions | 100% | 100% | 50% |
| Identifying and understanding industry trends | 75% | 100% | 50% |
| Evaluating customers' needs, expectations & purchasing habits | 100% | 100% | 25% |
| Conducting market potential studies | 100% | 100% | 25% |
| Forecasting sales | 75% | 75% | 25% |
| Understanding legal, institutional and regulatory framework | 100% | 75% | 50% |

*Source: Own work*

***Figure 27: Comparative development of knowledge management capability***




*Source: Own work*

It is easy to determine a large disparity in the development levels attributed to Enterprise C on the one hand, and to Enterprise A and Enterprise B on the other hand. The two knowledge management processes that show the largest development differentials are those responsible for identifying clients' unmet needs and determining market potential. These two processes are critical for the adequate design of a business strategy as they feed knowledge and information required to identify business opportunities and to segment markets. It is not surprising that given this notorious weaknesses, Enterprise C is unable to develop its strategic competence and

eventually show low levels of competitiveness. The relative capability development analysis further strengthens this conclusion.

***Table 46: Relative knowledge management capability development***

| | Enterprise C vs Enterprise A | Enterprise C vs Enterprise B |
|---|---|---|
| **KNOWLEDGE MANAGEMENT FOR STRATEGIC PURPOSES** | **42%** | **42%** |
| Identifying and analysing the business' resource requirements | 50% | 50% |
| Evaluating customers' reactions | 50% | 50% |
| Identifying and understanding industry trends | 67% | 50% |
| Evaluating customers' needs, expectations & purchasing habits | 25% | 25% |
| Conducting market potential studies | 25% | 25% |
| Forecasting sales | 33% | 33% |
| Understanding legal, institutional and regulatory framework | 50% | 67% |

*Source: Own work*

Differences in the knowledge management capability development levels between Enterprise A and Enterprise B on the one hand, and Enterprise C on the other, could be attributed to management beliefs and operational decisions (Tripsas and Gavetti, 2000; Zollo and Winter, 2002; Ethiraj *et al*. 2005). Particularly, it could be linked to the number and nature of knowledge management initiatives and tools put in place by managers, and their perceptions about the nature of competition. Table 47 shows the tools that each enterprise uses to manage knowledge.

***Table 47: Use of knowledge management tools***

| Knowledge management tools | Enterprise A | Enterprise B | Enterprise C |
|---|---|---|---|
| Peer assistance | No | Yes | No |
| Learning reviews | No | No | No |
| After action review | Yes | Yes | No |
| Knowledge cafe | No | No | No |
| Knowledge worker competency plan | Yes | No | No |
| Knowledge portal | Yes | Yes | Yes |
| Knowledge map | No | No | No |
| Expert locator | Yes | No | No |
| Mentoring scheme | Yes | No | Yes |
| Community of practice | No | Yes | No |
| Client relationship management tools | Yes | Yes | No |
| Enterprise resource management tools | Yes | Yes | Yes |
| Business intelligence tools | Yes | Yes | No |
| Equipment performance monitoring tools | Yes | Yes | No |

*Source: Own work*

All enterprises have tools to manage operational knowledge (e.g. after action review, mentoring schemes, ERPs, etc.), which are important to achieve the necessary levels of effectiveness and

efficiency in production and assembly operations. These tools and initiatives help enterprises keep costs to an acceptable level, to reach necessary quality levels, and to transfer technical knowledge among employees to perform their daily activities. The knowledge these tools collect is mostly tacit and organization-specific as it refers to the particular modes of functioning of a business and its particular organizational context.

When it comes to the use of tools to manage knowledge for strategic purposes, only Enterprise A and Enterprise B have devoted sufficient resources to develop and implement such tools. Enterprise C lacks CRM and business intelligence tools that are critical for a good understanding of the clients and the markets in which it operates. Due to the nature of their business (i.e. tailor-made offer with high R&D and design content), Enterprise A and Enterprise B have designed tools to gather operational information related to the way their machines are being used, to be later used for strategic purposes. Enterprise A and Enterprise B make intensive use of information and knowledge gathering tools to identify potential business opportunities (e.g. identification of clients' needs, application of new technologies to the business, application of the business capabilities to new areas, etc.) and to predict market changes. These tools have proven to be fundamental in the strategic evolution of Enterprise A and Enterprise B. The managers of Enterprise C have underestimated the importance of strategic information and have overlooked the development of a capability to gather such knowledge.

### 12.1.3 Comparative production and marketing competence development

As it could not be otherwise, the development of the business' marketing and production capabilities cannot be assessed in isolation, but in connection with the chosen business strategy and the positioning of the offer. These competences should be assessed *vis-à-vis* the strategy and independently of whether the strategy is adequate or not. From that perspective, all three enterprises have successfully managed to develop effective and efficient capabilities as required by their respective strategies.

Enterprise A and Enterprise B follow similar strategic paths, both focus their efforts on international growth and on satisfying clients' needs with a high-tech, innovative, and tailor-made offer. Enterprise C focuses on offering the lowest possible price to its clients, and considers international markets as being of secondary importance. Given that none of the three enterprises consider international markets to be intrinsically different from domestic markets, their production and marketing capabilities do not change when producing for one market or the other, except for some important morphological adaptations.

Given their positioning, the most important production capability of Enterprise A and Enterprise B is that of conferring the offer the right combination of attributes. The two enterprises operate in a similar manner, they treat each order independently and no two final products shipped to their clients are the same. Every time they complete an order, it includes all the learnings acquired in previous projects and all the technological improvements available for that product type and for the clients' specifications. This implies that they have no mass production and no storage of final products, which entails that they do not need to worry about product lifecycle and discontinuation in the way enterprises manufacturing standardized products do. The critical success factor that confers these enterprise their ability to always deliver an offer with the right combination of attributes is their ability to design and prototype new products, and to enhance and adapt existing ones. To achieve this, they have invested heavily in the development of knowledge management tools and procedures to ensure all relevant information about clients' needs, equipment performance, new technological possibilities, as well as all relevant technical knowledge developed internally is available to those in charge of designing the offer. Thanks to these investments the companies have developed a strong dynamic capability to meet the attribute requirements demanded by the clients.

Enterprise C has selected a positioning strategy drastically different from that of Enterprise A and Enterprise B. Therefore, those capabilities that are critical for the success of Enterprise A and Enterprise B's strategy are of secondary importance and largely underdeveloped at Enterprise C. Cost is the key production dimension for Enterprise C, and all its production operations and the development of capabilities in the firm are geared towards maximum cost reduction.

The marketing capabilities of the three enterprises studied show the highest levels of disparity in terms of development, and they constitute the capability group that required some adaptation to cope with international transactions. Given that Enterprise C's domestic and international transactions have been in most of the cases the result of unsolicited orders, the enterprise shows very low development of its marketing competence. The success of the company's sales agent in Germany cannot be considered as the outcome of an internal capability development process but rather the ability of the sales agent to incorporate Enterprise C to his portfolio of clients. Enterprise A and Enterprise B on the other hand have reasonably well-developed, and very similar, marketing capabilities that help them convey their message to the clients and secure business deals. The major adaptations required for international markets refer to the use of sales agents to prompt clients and identify potential business opportunities

abroad. The brand development efforts, the use of ICTs to present the company and its offer, the participation in trade fairs, and other marketing activities are common to both, domestic and international markets.

The table below shows a comparative assessment of the production and marketing capabilities of the three enterprises studied in this work.

***Table 48: Comparative production and marketing capability development***

| | Enterprise A | | | Enterprise B | | | Enterprise C | | |
|---|---|---|---|---|---|---|---|---|---|
| | Low | Med. | High | Low | Med. | High | Low | Med. | High |
| **Production capabilities** | | | | | | | | | |
| Meeting attribute requirements | | | X | | | X | X | | |
| Meeting quality requirements | | | X | | | X | | | X |
| Meeting quantity requirements | | X | | | | X | | X | |
| Meeting cost requirements | | | X | | | X | | | X |
| Meeting time requirements | | X | | | | X | | X | |
| **Marketing capabilities** | | | | | | | | | |
| Communication | | | X | | | X | X | | |
| Distribution | X | | | X | | | X | | |
| Obtaining orders and securing sales contracts | | | X | | | X | X | | |

*Source: Own work*

### 12.1.4 Capability development for business dynamicity

By taking a broader look at the full set of dynamic capabilities identified in chapter five, and using Teece's (2009) classification of sensing, seizing, and reconfiguring capabilities, it is possible to get a clearer picture of the enterprises' ability to identify and exploit profitable business opportunities. While Enterprise A and Enterprise B have an overall medium to high level of development of their dynamic capabilities, Enterprise C is (in most of the cases) in the medium to low development range. This is particularly true for sensing capabilities that confer the business its ability to identify new opportunities.

While Enterprise A and Enterprise B reach the highest level of development for most of the dynamic capabilities (67%), Enterprise C only has two dynamic capabilities with high levels of development. Not surprisingly, those two capabilities are related to the management of physical assets and human resources, two key resources to maintain cost at minimum levels as required by its business strategy. Notably, those capabilities that seem to confer Enterprise A

and Enterprise B their competitive edge (i.e. knowledge management, innovation, and strategy design) rank among the lowest at Enterprise C.

***Table 49: Sensing, seizing, and reconfiguring capabilities***

| | Enterprise A | | | Enterprise B | | | Enterprise C | | |
|---|---|---|---|---|---|---|---|---|---|
| | Low | Med. | High | Low | Med. | High | Low | Med. | High |
| **Sensing capabilities** | | | | | | | | | |
| Innovation and dynamization | | | X | | | X | X | | |
| Networks and relationships mgmt. | | X | | | X | | | X | |
| Knowledge management | | | X | | | X | X | | |
| Resource coordination and orchestration | | X | | | X | | X | | |
| **Seizing capabilities** | | | | | | | | | |
| Design a business strategy | | | X | | | X | X | | |
| Plan a business strategy | | | X | | | X | | X | |
| Design and implement an org. structure | | | X | | | X | | X | |
| Meeting attribute requirements | | | X | | | X | X | | |
| Financial assets management | | | X | | | X | | X | |
| Physical assets, infrastructure and technology management | | | X | | | X | | | X |
| Non-physical assets management | | X | | | X | | X | | |
| Networks and relationships mgmt. | | X | | | X | | | X | |
| Knowledge management | | | X | | | X | X | | |
| Resource coordination and orchestration | | X | | | X | | X | | |
| **Reconfiguring capabilities** | | | | | | | | | |
| Design and implement an org. Structure | | | X | | | X | | X | |
| Human resources management | | | X | | | X | | | X |
| Knowledge management | | | X | | | X | X | | |
| Resource coordination and orchestration | | X | | | X | | X | | |

*Source: Own work*

The model in chapter five offers a hierarchy of capabilities that could be used to further understand the competitiveness levels reached by the three enterprises. While higher order dynamic capabilities are critical to develop competitive advantage, lower order dynamic capabilities and operational capabilities are necessary to achieve operational excellence through improvements in effectiveness and efficiency.

Enterprise A and Enterprise B show high development levels of all third and second order dynamic capabilities, while Enterprise C is in the low to medium development range for these capabilities. A look into the first order dynamic capabilities and the operational capabilities shows a less dissimilar capability development between the three enterprises. While Enterprise A and Enterprise B still show higher overall development levels, Enterprise C has managed to

reach high development levels for some capabilities critical for the chosen strategy. This is not surprising as Enterprise C is the only company that is still predominantly focused on production.

***Table 50: Hierarchical capability development***

| | Enterprise A | | | Enterprise B | | | Enterprise C | | |
|---|---|---|---|---|---|---|---|---|---|
| | Low | Med. | High | Low | Med. | High | Low | Med. | High |
| **3rd order dynamic capabilities** | | | | | | | | | |
| Knowledge management capability | | | X | | | X | X | | |
| **2nd order dynamic capabilities** | | | | | | | | | |
| Design a business strategy | | | X | | | X | X | | |
| Plan a business strategy | | | X | | | X | | X | |
| Design and implement an org. structure | | | X | | | X | | X | |
| Innovation and dynamization | | | X | | | X | X | | |
| **1st order dynamic capabilities** | | | | | | | | | |
| Meeting attribute requirements | | | X | | | X | X | | |
| Financial assets management | | | X | | | X | | X | |
| Physical assets, infrastructure and technology management | | | X | | | X | | | X |
| Non-physical assets management | | X | | | X | | X | | |
| Networks and relationships mgmt. | | X | | | X | | | X | |
| Resource coordination and orchestration | | X | | | X | | X | | |
| **Operational capabilities** | | | | | | | | | |
| Meeting quality requirements | | | X | | | X | | | X |
| Meeting quantity requirements | | | X | | | X | | X | |
| Meeting cost requirements | | | X | | | X | | | X |
| Meeting time requirements | | | X | | | X | | X | |
| Communication | | | X | | | X | X | | |
| Distribution | | X | | | X | | X | | |
| Obtaining orders and securing sales contracts | | | X | | | X | X | | |

*Source: Own work*

### 12.1.5 Conclusions of the comparative analysis

The dynamic capabilities framework suggests that the evolution of the firm is not random, and that its trajectories are determined by the business' resources and capabilities (i.e. positions) from which change proceeds (Teece *et al*. 1997). Capabilities originate form a series of path dependent learning experiences (Dierickx and Cool, 1989; Teece *et al*. 1997). Change is therefore constrained by the business' stock of resources and its capabilities developed over time, and persistent performance differences among enterprises could be attributed to differences in resources and capabilities (Helfat, 1994).

The fact that Enterprise A and Enterprise B on the one hand and Enterprise C on the other, have focused on the developed of a different set production and marketing capabilities should by no means be understood as an explanation of their competitiveness differentials. In fact, all three enterprises have been very successful in developing the necessary production and marketing capabilities that their respective strategies required. Competitive advantage is not the result of an effective and efficient development of the production and marketing competences, but rather the outcome of a strong strategic competence supported by well-developed production and marketing competences.

Dynamic capabilities provide a business the capacity to renew its resource base, and their efficacy depend on the efficacy of the underlying processes that constitute them. To accomplish this expected change in the resource base, the business uses different processes, tools, and initiatives. Evidence gathered in this work point out to the fact that the enterprises' selection of knowledge management processes, tools, and initiatives has an important role in the development of competitive advantage. Enterprise A and Enterprise B have managed to develop a knowledge management capability not only focused on operational knowledge but also on knowledge to be used for strategic purposes. This has allowed both companies to develop a strong strategic competence, and in particular strong capabilities to design a business strategy and to innovate. These enterprises devote important resources to the creation, integration, and retention of internal knowledge, the reconfiguration and internal reallocation of resources, and the adaptation of internal organizational structures and functions to improve their operations through better knowledge flow. Furthermore, the two enterprises make extensive use R&D for the creation of new products and process innovations that allows them to create and sustain competitive advantage. A strong strategic competence allowed both companies to evolve over time, to find new markets, and to be less vulnerable to economic downturns. Enterprise C's selection of knowledge management tools is strongly biased towards operational knowledge. Consequently, the company shows a weak development of its strategic competence and high levels of strategic inertia. This incapability to change has made the company practically defenceless to the different crisis it faced in its life.

While Enterprise A and Enterprise B have managed to develop strong third and second order dynamic capabilities, Enterprise C focused its efforts in the development of operational and first order dynamic capabilities. The hierarchy of capabilities presented in chapter four suggests that those enterprises with strong higher order dynamic capabilities are more likely to achieve

competitive advantage. Evidence shows that this is the case in the three enterprises analysed in this work.

## 12.2 What is the evidence telling us about research question one?

Does the international business need to develop unique capabilities to succeed in international markets over and above those needed to succeed in domestic markets?

Research question one addresses an issue that has not been sufficiently explored in the business literature, and has generated the proliferation of inconsistent and incomplete approaches to capability development for business internationalization. In order to answer this question, a model that focuses on the structural and organizational characteristics of the SME was constructed and used to analyse the evidence collected as part of the desk and field research. The model identifies all business competences and capabilities, as well as a set of processes that constitute each capability. The key underlying objective is to determine the validity of Penrose's notion that domestic and international firms are intrinsically the same and that there is no need to develop different theoretical constructs to analyse them.

The model presented in chapter five proved to be a very useful tool to analyse all enterprises in the sample, independently of their export intensities and other characteristics that are usually used to describe an enterprise (e.g. size, longevity, type of clients, offer that takes to the market, profitability, etc.). As a conceptual framework, the model has demonstrated its flexibility to be used in the analysis of extreme cases such as those of a small domestic enterprise with sporadic exports like Enterprise C, and a medium sized, highly dynamic and fully international enterprise like Enterprise B.

During the interviews, and as part of the questionnaires they completed, none of the managers suggested their businesses needed to develop unique capabilities for international markets. Furthermore, when referring to their business production and marketing operations, only on very specific occasions they made a distinction between domestic and international markets. The identification and analysis of the critical capabilities in each of the three enterprises helped to determine whether additional capabilities were needed or not.

The business strategic competence is built through three groups of capabilities. The capabilities to design and plan a business strategy, the capability to design and implement an adequate

organizational structure, and the capability of innovate. All enterprises have shown to have this competence and its constituting capabilities, although exhibiting different degrees of development. The weakest enterprise in terms of strategic competence is Enterprise C with a very weak development of the capabilities responsible for designing competitive business strategies, and a very weak innovation capability. On the opposite end of the capability development spectrum we find Enterprise A and Enterprise B, two enterprises with high export intensities and high development of all their strategic capabilities. The number and nature of capabilities identified in the theoretical model, which coincide with the strategic capabilities identified by other authors[73], seem adequate to describe how enterprises build their strategic competence.

The fact that Enterprise C could be described as a domestic enterprise with sporadic export transactions, while Enterprise A and Enterprise B have a clear international orientation, could lead some readers to think that there is a set of unique strategic capabilities that allowed those two enterprises to conceive successful international strategies. This would certainly be an incorrect conclusion as the case of Enterprise C is not that of an enterprise that is competitive in domestic markets, and due to the lack of certain strategic capabilities is not competitive in international markets. On the contrary, Enterprise C cannot be considered as a competitive enterprise[74], independently of the market being analysed. Its failure cannot be attributed to the liabilities of foreignness, smallness, newness, complexity, or outsidership. Enterprise C's lack of adequate strategic capabilities prevents the enterprise from correctly identifying the business it is in, and from conceiving a competitive business strategy. Furthermore, the company's incursion in international markets did not contribute to its profitability and growth.

In all cases, managers have clearly expressed that production operations are fundamentally the same irrespective of the market that is being served. Thus, it is possible to conclude that the number and nature of production capabilities for domestic and international markets are the same. Furthermore, the evidence gathered serves to confirm that the five production capabilities resulting from five of the seven strategic positioning dimensions represent an exhaustive list of all the constituting parts of the production competence.

The case of marketing capabilities is less straight-forward. When asked whether marketing operations differed when applied to domestic or international markets, the managers of enterprises with higher export intensity answered positively. These answers could be

[73] Please refer to table 26 in chapter five of this work.
[74] As per the definition of competitiveness given in chapter one.

interpreted as indication that the nature and number of marketing capabilities for domestic and international markets may change. The key issue was to determine if the differences were sufficiently important to assert that international markets require the development of unique marketing capabilities. When asked about the specific differences, managers mentioned the use of sales agents, the correct identification of taxes and duties applicable to the offer, and the use of INCOTERMS. All these issues have already been identified in chapter five (table 29) as morphological changes that need to be implemented when entering international markets. Managers provided no indication that other marketing capabilities should be developed over and above those identified by the model of chapter five.

All the evidence points out to the validation of proposition 1.1.

| | |
|---|---|
| Proposition 1.1 | Domestic and international firms develop the same set of competences and capabilities. |

While evidence has indicated that the number and nature of competences and capabilities should not change, it has provided support to the notion that important morphological changes may be required.

One example of a capability's morphological change is the way the three companies adapted their *capability to obtain orders and secure sales contracts* when faced with the challenge of international markets. The major changes in this capability affected the process of *prompting and responding to sales inquiries* which refers to the business ability to define procedures to initiate contact with prospective buyers, prompt inquiries and respond to them.

In all cases the initial starting point was characterized by the companies prompting, negotiating, and closing all international contracts from their headquarters office. The capabilities of the three enterprises studied in this work evolved to the use of a combination of various mechanisms to contact potential clients and generate sales opportunities.

Enterprise C is the company where this capability has gone through more modest and less successful morphological adjustments. All domestic and most international transactions are entirely managed from the headquarters office. In the case of the German market, the company has opted to hire the services of a sales agent, which is an important evolution when compared with almost half a century of prompting international sales orders from its headquarters office

in Zarautz. Despite the physical and psychical proximity of the market, the company has been unsuccessful in its attempts to enlarge the network of sales agents to France.

The evolution of this capability at Enterprise A and Enterprise B is similar. The initial move of both enterprises was to develop a network of sales agents. In the case of Enterprise A, this network works exclusively for the company, while Enterprise B's sales agents represent various clients. Enterprise A has gone a step further in strengthening this network of sales agents by complementing it with a specialized headquarters marketing team that leads and monitors the work of the sales agents. Complexity was added to the capability when both enterprises decided to open subsidiaries and/or joint ventures to enter critical markets, China and the United States in the case of Enterprise B and the United Kingdom and the United States in the case of Enterprise A. In both cases, the sales agents and the subsidiaries are responsible for identifying potential clients and business opportunities. Once the likelihood of closing the deal is high, headquarters' personnel takes over the responsibility of securing the contract.

It is important to mention that the use of sales agents and subsidiaries to identify and contact potential clients is not exclusive to international markets. While it is certainly not the case of the enterprises analysed in this work, it is common practice for many strictly domestic enterprises to use similar mechanisms to reach clients. In the cases where the domestic market is geographically large, or potential clients are sufficiently atomized, or the characteristics of the offer allow for it, enterprises may choose to use travelling salespersons, regional sales representatives, or to open commercial branches within their domestic market. These are the domestic market versions of the international sales agents and subsidiaries. Thus, developing the ability to manage sales agents and subsidiaries cannot be considered as unique to international markets, but rather the natural evolution of a capability already identified for domestic transactions.

Evidence supports the opinion of Eisenhardt and Martin (2000) that capabilities consist of a set of identifiable specific processes that exhibit commonalities across firms, despite having idiosyncratic characteristics. Furthermore, evidence also supports the view of Autio *et al*. (2011) that capabilities are not developed as part of a "master plan". A clear example of this is Enterprise B's development of its capability to obtain orders and secure sales contracts.

Evidence gathered in the three enterprises leads to the confirmation of the need to undertake morphological changes in the capabilities, and therefore to the validation of theoretical proposition 1.2.

| | |
|---|---|
| Proposition 1.2 | Internationalizing firms may require undertaking morphological changes in their capabilities in order to factor in the increased levels of complexity and dynamicity prevailing in international markets. |

In line with Geroski's views (Geroski, 2005), evidence points out that the relevance of certain capabilities changes as the company increases its presence in international markets. While it is possible that enterprises having a weak strategic competence are capable of surviving in domestic markets based exclusively on the effectiveness and efficiency of their production processes, this seems unrealistic in international markets. Enterprises that have managed to achieve high levels of internationalization are characterized by having a well-developed strategic competence, and by using this competence as one of the pillars of their success.

As rightly pointed out by several authors, whether a company is able to develop certain capabilities is partly determined by the conscious decisions of its managers (Tripsas and Gavetti, 2000; Zollo and Winter, 2002; Ethiraj *et al*., 2005). Enterprise C deliberate underinvestment in the development of its knowledge management capability, as well as other capabilities that would have helped the business to add-value and differentiate its offer, have prevented the emergence of dynamic capabilities. Capability development is dependent of previous strategic and operational decisions (Teece *et al*. 1997), but this path-dependency could be broken by adequate knowledge management mechanisms as evidence gathered at Enterprise A and Enterprise B confirm.

When Enterprise B determined internationalization was key for the survival of the business, it clearly focused its efforts on the strengthening and development of critical dynamic capabilities. The first things Enterprise B did were to strengthen its capability to furnish the offer with the desired attributes, and to strengthen its capability to innovate. These are two critical dynamic capabilities of the strategic and production competences respectively that provide flexibility and dynamicity to the business.

In the unsuccessful internationalization case of Enterprise C, the company exhibits serious weaknesses in its strategic competence that cannot be attributed exclusively to the lack of sufficient information. The company lacks the necessary knowledge to develop two important strategic dynamic capabilities, the capability to design a business strategy and the capability to innovate. The weakness of the strategic competence conditions the development of the

company's production and marketing competences, considerably limits its strategic and operational choices, and constrains its internationalization efforts.

Internationalization does not make operational capabilities irrelevant. Factors such as price, volumes, times of delivery, quality, branding, etc. still play an important role in securing international contracts. Consequently, the operational capabilities that contribute to shape the business' offer will always be important. Nevertheless, in highly technological and profitable markets where differentiation and value addition are key concepts, contracts are awarded on the basis of how well the offer address the clients' needs and solves their problems. Operational capabilities, both marketing and production related, are necessary but not sufficient conditions to secure contracts. How well an offer will address the clients' needs and solve their problems will depend on the company's ability to craft a unique offer, to innovate, and to be flexible enough in order to adapt to and predict clients' ever changing needs. This can only be achieved through the proper development of dynamic capabilities. The discussions with the Managing Directors of Enterprise A and Enterprise B made it clear that they viewed the success of their businesses as residing in their business' ability to adequately manage knowledge, and to apply it in the development of dynamic capabilities and in the creation of value for the client. This is perfectly in line with the views of other researchers (Grant, 1996a and 1996b; Teece *et al*., 1997) who consider that knowledge and the firm's ability to integrate different resources to form strong capabilities are be the main source of competitive advantage.

Looking back to table four in chapter one, we see that both, Enterprise A and Enterprise B have focused on the resources and processes identified as determinants of long term competitive advantage (i.e. knowledge management processes and processes constituting the business' strategic competence). Enterprise C on the contrary has focused its attention on the development of operational and administrative business process that lead only to a temporary short term advantage. This could explain why Enterprise C has not managed to succeed in more dynamic international markets, and why it is constantly struggling with very low profit margins.

Along the lines of Sharkie's views (Sharkie, 2003), it is possible to argue that competitive advantage in international markets depends on the speed at which businesses can generate, capture, and disseminate knowledge, and use it to develop new resources and capabilities that competitors cannot easily imitate. Hence, it is possible to validate theoretical proposition 1.3 and 1.4. Not only the relevance of capabilities change when entering international markets, but dynamic capabilities become critical for the success of the business.

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| Proposition 1.3 | The capabilities' importance and relevance may change when moving from domestic market to international markets. |

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| Proposition 1.4 | Dynamic capabilities will become a critical success factor in international markets. |

## 12.3 What is the evidence telling us about research question two?

Does the existence of knowledge management capability allow the manager of an exporting SME break the path-dependency of its strategic internationalization decisions by enlarging the firm's productive opportunity set?

This question targets the core of the business' entrepreneurial actions and is probably one of the most important questions this research work has addressed. In terms of the model outlined in chapter five, this research question attempts to determine the existence and nature of relationship between the knowledge management capability and one particular capability of the business' strategic competence, that of designing a business strategy.

In a sector, like the machine tool sector in Spain, characterized by frequent changes, high vulnerability to economic downturns, and strong competition, firms need to remain flexible and be ready to handle a wide range of opportunities and threats if they want to survive. Companies need to continuously scan the market, learn from it, and attempt to anticipate its movements. They can only do this by fostering their learning ability and absorption capacity through a well-designed and well-implemented knowledge management capability. It is the opinion of the Managing Directors of Enterprise A and Enterprise B, the two most internationally successful and dynamic enterprises analysed in this work, that knowledge and its application to satisfy clients' needs are the key building blocks that support the competitiveness of their enterprises.

Evidence gathered in this research work shows that knowledge management capability is a very broad and complex construct, and the morphology of the processes that constitute this capability has a great influence on the results it generates. If this capability is biased towards the identification, collection, transfer and protection of operational information aimed at achieving productivity gains, as opposed to strategic differentiation, it will not be possible to

break path-dependency of strategic decisions. Furthermore, evidence shows that as important as the morphology of each individual process or initiative, is the way all the processes and initiatives complement and synergize with each other. Isolated knowledge management initiatives fail to have a meaningful impact on capability development, but when a set of knowledge management initiatives is designed and put in place with a clear purpose and in such a way that they complement each other, positive capability development results should be expected.

Enterprise C is a clear example of a company that has a knowledge management capability with a morphology that is not conducive to the strategic evolution of the business. The company devotes virtually no resources to the identification and acquisition of knowledge that could be used for strategic purposes and to further expand its productive opportunity set. Consequently, the company has been unable to develop ambidexterity (March, 1991), and is currently trapped in the path-dependency of its past strategic decisions resulting from the imprint (Stinchecombe, 1965; Boeker, 1989; Johnson, 2007; Beckman and Burton, 2008) made by the founders of the business. All important decisions the company has made over the years have been operational in nature. In the case of Enterprise C imprint takes many forms:

- the preeminent focus on the product and on developing production capabilities in detriment of innovation and value addition;
- risk aversion and the need to have a gradual growth strategy;
- the exclusive focus on the core business (i.e. manufacturing of gears); and
- the focus on defeating competition through better prices rather than avoiding competition by differentiating the offer through increased sophistication and service provision.

Enterprise C's original sin was the decision that the business should devote its knowledge acquisition efforts almost exclusively to support the company's efficiency improvement processes and mechanisms. This initial imprint led the firm to make no significant strategic decisions and to make operational decisions, including investments, with the main purpose of cutting costs and further strengthening the ability of the firm to produce gears. The manager of Enterprise C explained the cycle in which the company is trapped: The high demand of gears led to important investments in production equipment, which resulted in continuous improvement of the company's knowledge and skills related to gear manufacturing, which in turn led to efficiency gains and the investment of profits in the acquisition of more production equipment. When asked why the company opted to confine itself to the gear business, the manager replied:

"*Manufacturing gears is what we know, and this is our strength*". The focus on the physical product the company manufactures is clear. In a context of limited access to finance and small profit margins, the focus on the product required investments in production facilities and equipment that resulted in sunk costs (Ghemawat, 1991). These sunk costs further restricted the scope of action of the company and led to escalating commitments (Straw, 1976) that prevented Enterprise C from changing its course of action, despite negative results (i.e. not being able to develop a differentiated offer, to grow in international markets, and to escape from price competition).

Thinking in terms of the factors that influence capability development (Teece *et al*. 1997), Enterprise C is a good example of a company where the initial asset *position* determined its evolutionary *path*. Current resource and capability endowments have been determined by past decisions concerning what processes should be developed, which eventually limited the strategic choices available to the company. Because of that initial decision, the company has been unable to renew its resource base, particularly its knowledge base, leading to strong path-dependency of its strategic choices as the creation of new skills is based on the existing capabilities at any point in time (Kogut and Zander, 1992).

As a result of bounded rationality and path-dependency, Enterprise C's growth has always been within the close vicinity of its original business and always following the same strategy of offering the lowest possible price. Due to path-dependency and the failure to develop a strategy-oriented knowledge management capability, Enterprise C does not show any of the characteristics of an entrepreneurial organization such as investment in R&D and innovation that goes beyond the business' boundaries, risk taking behaviour, flexibility, and strong market orientation.

According to path-dependency, early steps in the internationalization process limit the rate and the direction of firms' knowledge accumulation. What firms learn in the future, where they seek information, what information they seek and to what extent, are all contingent upon the stock of knowledge and the absorption capacity that they develop in the early years of their internationalization (Eriksson *et al*., 2000). At the time of the first export transaction Enterprise C did not have the necessary mechanisms in place to benefit from the knowledge generated by that transaction. Even nowadays, Enterprise C's knowledge management capability could be considered to be in its *founding stage* as per Helfat and Peteraf (2003) capability lifecycle model. The lack of adequate knowledge gathering mechanisms led the business to develop a preference

for certain strategies, risk levels, and types of transactions, which eventually made it difficult for the company to deviate from the norm.

As described by the Uppsala internationalization model, the first international transaction took place long after the foundation of the business, and it was not the result of a planned strategy but rather of an unsolicited sales order. Since the company was focused on the development of its production capabilities, and neglected the development of its knowledge management capability, it failed to put in place the necessary mechanisms to acquire the critical knowledge that drives business internationalization, and to learn from this experience. Looking at the typology of knowledge for internationalization presented in chapter three (figure five), we could easily see that the company has been able to gather *objective market knowledge* with little real value, and almost no *experimental market knowledge* which could have been used to improve its internationalization strategy as it helps the business perceive opportunities (Shane, 2000, Autio *et al*., 2000; Zahra *et al*., 2000; Chetti and Campbell-Hunt, 2003b). As a result of this, the internationalization strategy, and the tactics associated to it, did not evolve in over thirty years. The lack of this critical knowledge prevented Enterprise C from conceiving alternative strategies and tactics to consolidate its presence in international markets, and to identify new business opportunities beyond the boundaries of its core business. It was only in 2.009 when the company decided to actively prompt international clients through a sales agent in Germany. The catalyst for this change was the severe economic downturn and not the result of the development of internal capabilities. Furthermore, the inability to replicate in France the success of the sales agent in Germany shows that this achievement cannot be attributed to the business but to the entrepreneurial mind-set of the sales agent.

The opposite case is that of Enterprise B, a highly entrepreneurial company that used knowledge and its management as the foundation for the growth and internationalization of the business. Knowledge and its management has been the key driver of Enterprise B's growth since the mid 70s when it decided to make innovation the pillar of its offer. It took Enterprise B 53 years to conduct its first international transaction with a company located in neighbouring France. This path fits perfectly within the theoretical structure proposed by the Uppsala internationalization model. Unlike Enterprise C, Enterprise B actively worked to develop this opportunity and was ready to benefit from the knowledge generated by it. Enterprise B's knowledge management capability consists of well-developed processes and initiatives to identify and acquire knowledge for strategic purposes, which allowed the business to use the resulting knowledge to successfully pursue adaptive and manipulative internationalization paths. One of the most salient results of

the knowledge acquired in the initial phase of adaptive internationalization was the development of proprietary technology to design and produce its own electronic components, which later resulted in the creation of the sister company Enterprise M. The changes implemented as part of the Strategic Plan 2.012 set the foundations that allowed the enterprise to break from the adaptive internationalization strategy of the previous years, and develop path-creating internationalization trajectories.

Whether a company is able to break free from history and create new paths for internationalization (i.e. expand their productive opportunity set) is in part determined by the way the business acquires, shares and interprets information and knowledge, as well as how it uses knowledge to reconsider the appropriate mode of internationalization (Best, 1990; Van Den Bosch *et al*., 1999 and 2003). Adequate knowledge management has allowed Enterprise B to combine incremental, path-dependent growth, with innovative, path-creating growth. Proper knowledge gathering mechanisms allowed the company to identify opportunities to exploit its existing knowledge and capabilities to develop a new product line targeting small-scale paper converters. The same mechanisms allowed the company to identify new market opportunities in the upstream market (i.e. paper producers), and to develop new knowledge and technologies to create new markets for the company (i.e. banknotes market). Through knowledge management the company has managed to become ambidextrous (March, 1991; Prange and Verdier, 2011), and ambidexterity is an indicator of the widening of the business' productive opportunity set. The case of Enterprise B confirms the framework of Phelps *et al*. (2007) which suggests that firm's growth paths, domestic or international, is determined by the firm's ability to manage knowledge and use it to solve problems and face crisis.

Knowledge management has also allowed Enterprise A to move from Porterian strategies driven by market forces that characterised its initial years, to more client-centred strategies, and eventually to a strategy based on the use of VRIN knowledge and capabilities. Enterprise A has always been a knowledge-centred business, and the first important knowledge-driven strategic change occurred in the early 1.980s when the company started targeting the automotive sector. The change to a knowledge-centred enterprise was complete when Enterprise A focused on its VRIN knowledge and capabilities to target a wide array of industrial sectors where its automation-related knowledge could be applied to solve the problems of potential clients acting in those sectors. From its initial clientele of wood-transforming enterprises, Enterprise A has been able to expand its productive opportunity set to encompass various sectors and various levels of technical complexity. Knowledge and its management has been the catalyst that

allowed this expansion. It should also be mentioned that while being instrumental to the expansion of the productive opportunity set, there is evidence to suggest that knowledge and its management are also partially responsible for the growth limitations that Enterprise A experiences nowadays. Enterprise A's Managing Director acknowledged that in a knowledge-centred enterprise the growth of the company is constrained by the business' ability to incorporate and properly train new human resources. This is an indication that the company may be experiencing what Penrose called the "costs of growth", which are nothing but the time and effort required to integrate new resources to the business and to equip them with the necessary knowledge and skills to be productive.

The evidence presented here allows us to validate theoretical propositions 2.1 and 2.2 associated to this research question. Furthermore, it is not possible to support the suggestion that dynamic capabilities are characterized by causal ambiguity (Peteraf, 1993; Lippman and Rumelt, 1982; King, 2007) and that there is no clear casual connection between actions and results. Managers clearly identified and linked the different knowledge management mechanisms to the strengthening of certain knowledge intensive capabilities and to the success of the companies.

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| Proposition 2.1 | A well-developed and well-functioning knowledge management capability favours the identification of a larger number of profitable business opportunities, and the identification of business opportunities of different nature. |

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| Proposition 2.2 | A well-developed and well-functioning knowledge management capability favours international strategic ambidexterity and helps breaking path-dependency of international strategic decisions by allowing the business to think differently and address strategic decisions from an unconventional and/or new perspective. |

A firm's ability to absorb, use and process external knowledge plays an important role in the business' international expansion (Lewin and Volberda, 1999) as it influences the expectation formation process (Van Den Bosch *et al*., 1999 and 2003). Evidence gathered in this research work shows that knowledge, its management, and the development of an offer based on this resource, makes the Managing Directors of Enterprise A and Enterprise B more optimistic and have a more open attitude towards risk taking. Furthermore, when assessing the actual and

potential risks of international markets, both managers where confident that their companies had the necessary knowledge and capabilities to overcome any potential challenge. Realizing that the business possesses VRIN knowledge, and the capability to manage it and to apply it in such a way as to shape a unique value proposition for the clients, gives confidence and security to the managers. As a consequence of this, both Managing Directors see internationalization as an opportunity rather than a threat, and proactively use this knowledge to identify new business opportunities and to generate new knowledge that could be turned into profitable opportunities in the future. An example of how knowledge affects the perception of risk and shortens the psychic distances between countries was given by Enterprise A's Managing Director who mentioned that the company considers European markets as its domestic market, despite differences in languages, business culture, and in some cases currency.

The opposite case is that of Enterprise C. When asked about the future, the manager described a grim and uncertain picture. Furthermore, she did not see the international business expanding, on the contrary, she thought that in the years to come the business will focus on its local clients who they knew very well. In the eyes of the management, internationalization required the business to assume risk levels that the business was not willing to take, and a set of capabilities the business did not have.

Enterprise B exemplifies how knowledge management can shape the future of the company by allowing a better assessment of the business capabilities. As part of the Strategic Plan 2.012-2.014 the company embarked in the identification of the core knowledge that distinguished the enterprise form its competitors. The identification of this knowledge allowed the company to reassess its internal capabilities and their potential application. Then it started exploring ways to apply that knowledge to generate new business opportunities. This led to the development of new product lines, the penetration of new markets, and the expansion of the productive opportunity set by identifying profitable business opportunities resulting from the application of this distinctive knowledge to markets outside the core business of the company. Nowadays the company is going a step further and while developing new knowledge, is exploring the application of its existing knowledge and capabilities to sectors that are distant from the paper transformation sector where the company was born and grew.

All evidence collected as part of this work help us have a better understanding of the effects knowledge management has on the perception of risk and on the assessments managers make of their capabilities. In light of the evidence presented it is possible to validate theoretical proposition 2.3 and 2.4.

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| Proposition 2.3 | A well-developed and well-functioning knowledge management capability reduces perception of risk of undertaking new endeavours (by allowing the managers to better analyse business opportunities) and reduces path-dependency of international strategic decisions. |

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|---|---|
| Proposition 2.4 | A well-developed and well-functioning knowledge management capability allows the manager make a better assessment of the current (and potential) production and marketing capabilities of the business, as well as the business current and future endowment of resources, leading to better strategic decisions. |

## 12.4 What is the evidence telling us about research question three?

Does the existence of knowledge management capability facilitate the improvement of existing, and development of new, capabilities (operational or dynamic) critical for the success of the export business?

This questions is operational in nature and seeks to understand the relationship between the knowledge management capability and the speed and degree of development and adaptation of other important capabilities for internationalization and growth. Knowledge management is said to be effective if it is able to enhance knowledge acquisition and application to achieve organizational effectiveness, efficiency, and innovation for improving business performance. The business literature tells us that knowledge management enables an enterprise to make more effective decisions about how to structure its value chain operations (Davenport and Prusak, 1998; Skyrme and Amidon, 1998; Martensson, 2000; Becerra-Fernandez *et al*. 2004). Four levels have been identified where knowledge management impacts business operations: *people*, *processes*, *products*, and the business' overall *performance* (Becerra-Fernandez *et al*., 2004). In terms of the model presented in chapter five, these levels refer to one of the six identified business' resources, the processes that constitute the critical capabilities of the business, the offer, and the fourth objective of the marketing function.

Given that this question attempts to isolate the effects of knowledge management on the improvement of the business' capabilities we will be most interested on the effects knowledge

management has on two of the four aforementioned dimensions: *people* and *processes*. The reason for this is that *processes* are the constituting parts of capabilities, and *people* are responsible for the design and implementation of those processes. *Products* are the outputs of a specific set of dynamic and operational capabilities. *Performance* is an expected result of management actions. Consequently, these two dimensions (i.e. products and performance) are in fact indicators of the strengthening or development of the business capabilities, and will be used as evidence to support the answer to this research question.

***Knowledge management's effect on people***

Penrose viewed people as being the most important business' resource as it is their knowledge and insights that determine the future *productive opportunity set* of the firm and the a*djustment costs of growth*. Given that *people* is a key enabler of knowledge management, there is without any doubt a very close relationship between knowledge management and the management of the business' human resources (Brelade and Harman, 2000; Garavan *et al*., 2000; Robertson and Hammersley, 2000; Soliman and Spooner, 2000; Liebowitz, 2003). As Davenport and Volpel (2001), rightly point out: "*managing knowledge is managing people; managing people is managing knowledge*". In terms of its impact on the business' human resources, Becerra-Fernandez *et al*. (2004) argue that knowledge management facilitates employees *learning*, stimulates greater *adaptability*, and increases their *job satisfaction*.

These three constructs are not independent from each other, and are affected by the environment in which employees perform their activities and the way knowledge management is implemented in the organization. Tsai *et al*. (2007) discovered that when attention is given to employees' interpersonal relationships, they acquire more knowledge and develop new skills. Employees who acquire new knowledge and develop new skills are expected to be more adaptable and responsive to changes in the business environment. All these is achieved thanks to a reduction in uncertainty and an increase in self-confidence, market value, and on-the-job performance.

The three enterprises studied in this research work have implemented various mechanisms to facilitate the learning and acquisition of tacit and explicit knowledge of its employees, and to reduce the knowledge transfer barriers (please refer to table 17 in chapter 3 for a list of possible knowledge transfer barriers). Not all of these initiatives are necessarily related to training and knowledge sharing mechanisms, but they address the relationship between knowledge management and human resource management from a holistic perspective. **Effective**

**recruitment** of employees is one of these mechanisms. Through this process the enterprises have ensured that the right knowledge and competences are brought into their businesses. The hiring in 2.008 of a new Managing Director at Enterprise B is a good example of how effective recruitment can bring important knowledge to the company that trigger strategic and operational changes. Business literature highlights the importance of recruiting individuals with adequate skills and attitudes, and capable of fitting into the business' culture, as it facilitates the integration of knowledge from diverse sources (Scarbrough, 2003). Enterprise A and Enterprise B have formal *partnership agreements with educational and vocational training institutions* to incorporate young professionals and technicians. In the case of Enterprise B these mechanisms are biased towards the identification of individuals with technical skills to join the assembly and set-up teams, as well as young university professionals to join the technical design team. Enterprise A's bias is towards the identification of multifunctional engineers and other university graduates to join the design and R&D teams that can simultaneously contribute to the work of the three divisions.

Other mechanisms to foster employees learning and adaptability are the different **employee development** initiatives. All three enterprises assign great value and devote resources to on-the-job training of employees, and to peer-to-pear learning. All enterprises have engineered a system of rotation among different jobs during the newcomers' training period. By doing this, not only they acquire knowledge and skills to perform different duties, but also develop a network of trusted colleagues that facilitates knowledge sharing in the future. Enterprise C has developed a *competency matrix* for each employee, and is using that information to structure its *mentoring programme* aimed at fostering the transfer of tacit knowledge through direct person-to-person contacts. Similar initiatives were implemented by Enterprise A, which has an *organizational competency framework* and individual *employee competency plans*, coupled with a *mentoring programme*. Learning is also achieved through **knowledge transfer mechanisms** such as *after action reviews* and *information sharing meetings*, which have been implemented to boost knowledge sharing through socialization (Nonaka and Takeuchi, 1995). In order to benefit from experience and knowledge generated inside the company, Enterprise C uses *problem cards* to share tried-and-tested solutions to practical problems employees may face on their daily activities, and that have been encountered and effectively addressed by other employees earlier. This has proven to be an effective mechanism to increase employees' effectiveness, as well as to improve the working environment and the motivation of employees. To facilitate knowledge transfer, innovative thinking, and the identification of new solutions, Enterprise B created specialized *communities of practice* composed of employees from different

departments and sharing common interests. While addressing the needs of the company, this mechanism allowed employees to participate in shaping the company's future.

The three enterprises have also implemented mechanisms to **retain and prevent the loss of the knowledge** embedded in their human resources. Employee retention is of great significance for SMEs, particularly for those SMEs like Enterprise A and Enterprise B who differentiate from competitors on the basis of innovation and applied VRIN knowledge. Enterprise A has a policy by which internal candidates should be given preference over external candidates when a job vacancy is announced. By doing this, Enterprise A **provides opportunities** for its employees to grow and to advance their careers. The three enterprises have designed their human resources policies and practices to ensure they meet the personal and professional aspirations of their employees. The fact that the three enterprises have a very low employee turnover is an indication that these policies have achieved their intended purpose.

Through **fluid and transparent communication** the three enterprises have managed to create a conducive working environment in which employees feel comfortable and are eager to contribute to the company's activities. The three enterprises have open communication channels with their employees, the most developed being probably that of Enterprise B who created an *internal communication team* led by employees. In order to promote effectiveness and efficiency, and to boost employees' motivation and satisfaction Enterprise B has included a knowledge component in their performance management systems. The company developed a *strategy map* linking the work and the performance measures of each employee to the company's strategy, allowing employees to develop a sense of purpose and a better understanding of their role in the achievement of the business strategy.

All these initiatives, some of them at the cross-roads of knowledge management, human resources management, and operations management, were designed and implemented with the aim of increasing flexibility, promoting learning, and strengthening capabilities. Some initiatives had the objective of solving unique problems, where rich, tacit, personal knowledge is needed. Other were geared towards the improvement of effectiveness and efficiency, and the enhancement of the working environment. The common denominator of all these initiatives is that they focus on the company's human resources as the critical factor for the success of knowledge management efforts. All enterprises have expressed high levels of satisfaction with the results these initiatives have produced *vis-à-vis* the improvement of the working environment and motivation of employees, the degree of adaptability of the staff, and the operational improvements generated by the learning undergone by employees.

***Knowledge management effect on processes***

Evidence gathered in this research work shows that knowledge management plays an important role in preserving the performance level of business processes, which have a natural tendency to decay over time unless actions are taken to revert that trend (Andersen, 2007). Improving business processes enables a business to maintain and gain competitiveness by increasing productivity and responsiveness to changes in clients' demands.

Looking at the enterprises from a global point of view, without focusing initially on any specific process or capability, it is possible to say that knowledge management has had an important positive impact. **ERP systems** have allowed Enterprise A and Enterprise B to monitor very closely all operations and the use of all resources. Based on the information provided by these tools the managers are able to identify bottlenecks, problems, and resource needs in the different areas of the business. By being able to follow the rate of completion of each order managers are able to understand the work-load of each area and to better plan the work of the entire plant. When ERP systems are coupled with proper **business intelligence tools** that track the evolution of the market and of specific clients, the managers have all the required information to make better strategic and operational decisions.

The continuous growth in sales, and the improvements at the operational level, are a clear objective indication that the management of these two enterprises has been able to make adequate decisions that make the best possible use of the companies' resources and capabilities. It is therefore possible to validate theoretical proposition 3.3.

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| Proposition 3.3 | A well-developed and well-functioning knowledge management capability helps the manager better understand the business endowment of resources, its current production and marketing capabilities, and make better operational and strategic decisions. |

The next step in the analysis will be to deepen our understanding of the specific mechanisms by which knowledge management improve the companies' competitiveness. Knowledge management affects business processes either by providing new knowledge and information that would help the process achieve better results thanks to better inputs, or by improving the way processes are performed (e.g. by providing inputs to the plan–do–check–adjust cycle, by flattening the learning curve, by saving time thanks to the reuse of knowledge, by reducing communication costs, etc.). Becerra-Fernandez *et al*. (2004) suggest that knowledge

management drives improvements in business processes along three dimensions: *effectiveness*, *efficiency*, and *innovation*[75]. Gains in efficiency and effectiveness are characterized by the refinement of existing capabilities through standardisation, and are closely related to exploitative learning. Innovation-related improvements are associated with breakthrough thinking and explorative learning.

- *Business processes' effectiveness and efficiency*

The three cases analysed in this work provide sufficient evidence to suggest that knowledge management could potentially have an important impact on the effectiveness and efficiency of business process. It is interesting to take a closer look at those capabilities that managers have identified as critical for their businesses and see how knowledge management has helped to improve them in terms of effectiveness and efficiency. Within those capabilities, we will focus on processes that make intensive use of knowledge (i.e. where the application of knowledge is an integral part of the activities that make up the process), and we'll see how they have changed and what was the role of knowledge management, if any, in such change.

All managers mentioned that the **capability to conceive an offer with the right attributes** was fundamental for their enterprises as it was a critical building block to ensure clients were satisfied with the business' offer. In practice, only two of those enterprises, Enterprise A and Enterprise B, have really developed the capability in such a way as to become a pillar their business success.

The offer is given its physical and functional attributes by two processes: *new product design and prototyping*, *product alteration and enhancement*. Evidence collected as part of the fieldwork provides the researcher sufficient grounds to ensure that knowledge management is a key element to improve the effectiveness and efficiency of these processes

Enterprise A has made intensive use of knowledge acquisition mechanisms to craft an offer with the right combination of attributes to satisfy clients' needs. In order to ensure they capture and use the clients' knowledge, Enterprise A invites clients to participate in the design phase of the automated systems its sells. It also has a dedicated marketing team in charge of monitoring the market with the aim of anticipating market and technological changes, and use that information to adapt and enhance its offer. Enterprise A has equipped its machines with a monitoring system

[75] The notions of improving processes' effectiveness and efficiency, and of identifying new ways of performing them are closely related to the concepts of business process improvement (Harrington, 1991, Harrington *et al*. 1997) and business process reengineering respectively (Hammer and Champy, 1993).

via internet able of collecting performance data that will later be used to improve and adapt the standard multi-purpose modules used to build the automated systems it sells.

Enterprise B has also used of knowledge acquisition mechanisms to strengthen its capability to conceive an offer with the desired attributes. The connectivity cloud is a formidable multi-purpose tool that allows the company to gather performance information of the equipment it sells, and the way clients use that equipment. Thanks to this information Enterprise B is able to conduct a detailed analysis of the possible upgrades and potential output improvements of each machine it sells, and use that information as input in the design of their future machines. The connectivity cloud can also be used as a real time market research tool as it allows Enterprise B to monitor the market, anticipate clients' needs, and develop innovative solutions using that information.

A closely related capability is the **capability to innovate**, which include processes such as *conducting basic and technical research* and *capability dynamization*. This dynamic capability is an important part of the business strategic competence, and is a capability that makes intensive use of knowledge. Two of the three enterprises, Enterprise A and Enterprise B, use this capability to position their offers and to generate new business opportunities. Both enterprises conduct technical research with the aim of developing new knowledge and new technologies to strengthen their competitiveness.

In the case of Enterprise A, it is the close contact with its clients and the monitoring of the market evolution that provides crucial knowledge inputs that allow the company to undertake its research. Without this external knowledge it would not be possible for Enterprise A to identify research areas with business potential. Every year Enterprise A funds two technical research projects aimed at paving the way to future product development. Although less structured than Enterprise A's, Enterprise B's market monitoring mechanisms also provide critical knowledge for its technical research efforts. The company has created a *community of practice* exclusively dedicated to find innovative solutions to existing problems, and uses the knowledge they create to guide the R&D efforts of the business. By doing this, Enterprise B is able to leverage the collective knowledge and experience spread across the enterprise to strengthen the business competitiveness. Both companies make use of knowledge protection mechanisms, such as patents, to safeguard the result of their intellectual work.

**Quality** is a production dimension that is present in the strategies of all the companies analysed. Evidence shows that while this capability has been positively affected by the utilization of

knowledge management mechanisms, the impact on the effectiveness and efficiency of its constituting processes has been unequal.

Enterprise A and Enterprise B have developed enterprise resource management software tools that help keep track of every step along the production process and identify critical control points to perform adequate quality control procedures. Furthermore, these tools allow the companies to gather and process the necessary data from each control point. In this case knowledge management has helped to improve the effectiveness and efficiency of this process, but has not drastically change the way it operates.

Unlike the case of the determination of adequate *quality standards* that changed very little as a result of knowledge management mechanisms, the provision of *after sale services* has drastically changed with the use of information gathering tools. Thanks to the use of *on-line monitoring mechanisms* to track the use and performance of their equipment, Enterprise A and Enterprise B are able to provide preventive maintenance and repair services through the internet. This is a substantial improvement in terms of efficiency and effectiveness in the way the processes are being implemented, and also represent an innovative way of providing after sales services to clients.

Enterprise C is only one company that considers the **capability to produce at the desired costs** critical for the success of its strategy, the remaining two enterprises consider it an important factor but not the critical one that conditions clients' purchase decisions. In the two enterprises that highlighted their cost reduction efforts, the mechanisms put in place resulted from a combination of knowledge management initiatives, investment in physical assets, and production process reengineering.

Enterprise C coupled important investments in equipment and production facilities with the use of various knowledge management mechanisms to improve employees' motivation, commitment, and absorption capacity, as well as to improve the working environment. These mechanisms aimed at fostering information flow and transparency, as well as the transfer of tacit technical knowledge, resulted fundamental to overcome the difficulties experienced as a result of the economic downturn.

Enterprise B achieved 25% cost reductions mainly as a result of organizational restructuration (i.e. the merge of the two procurement departments that previously existed), and the standardization of the modules that served to assemble the equipment. While important, the contribution of knowledge management to the achievement of these results was limited to the

provision of data necessary for the analysis of the situation. As in the case of Enterprise C, Enterprise B also worked intensively on the improvement of communication with employees in order to generate a more conducive working environment. This has certainly contributed to cost reductions by facilitating change.

Enterprise C is the only enterprise in the sample that positions itself *vis-à-vis* the **volumes** it is able to offer its clients. The performance of this capability is more affected by capital investments and production process engineering, than by the knowledge management capability.

The same applies for Enterprise B, the company that shows the more spectacular increase in effectiveness and efficiency in this capability. Thanks to the standardization of production modules the company managed to double its production capacity in 12 months using the same number of employees. This was achieved thanks to the new knowledge and ideas brought into the company when hiring the new Managing Director, coupled with the improvements in employee motivation and in the working environment that resulted from the application of various knowledge management mechanisms. The standardization of the production modules was not the result of a specific knowledge management mechanism or process, but of the application of external knowledge.

None of the enterprises analysed in this work position its offer using the **time** dimension. Nevertheless, there is one enterprise that has managed to achieve important improvements in this capability and a notorious reduction in the time it takes to deliver the offer. From an initial time of twelve months, Enterprise B managed to deliver in six or seven months depending on the complexity of the order. As in the case of the capability to increase the volumes, the shortening of the delivery time is the result of structural changes and production process re-engineering, and not of the implementation of specific knowledge management mechanisms.

- *Business processes innovation*

Business process innovation refers to the ability of the business to perform processes in a creative and novel way, while ensuring the accomplishment of the remaining two dimensions (i.e. effectiveness and efficiency).

An example of process innovation is the morphological evolution of the process of *prompting and responding to sales enquiries*, which is undoubtedly one of the most critical business process in an international SME. Not only that knowledge management was conducive to facilitate this

change, but it also helped the companies to combine different morphologies in different markets. In some markets the companies use sales agents, while in others they prefer to open subsidiaries. Information gathered in trade fairs gave Enterprise A the indication that they needed to develop a network of sales agents. Improvements in knowledge and information gathering mechanisms, and the use of new technologies, allowed Enterprise A to close its sales subsidiary in the United Kingdom, and use the lessons learned to open one in the United States. Knowledge management, specifically market monitoring mechanisms and ERP systems installed in its assembly plant in Albiztur, made Enterprise B change its previous decision to open a production plant and expand its sales representation in China. Knowledge management allowed Enterprise B to identify business opportunities outside its core business, which led to investment in knowledge intensive activities such as R&D and new product development, which in turn generated the need to revisit the way the company was approaching its clients.

Knowledge management and the use of new technologies are also changing the way the companies communicate with their current and potential clients. While traditional communication channels such as trade fairs are still being used, more and more companies are using innovative ways to reach their stakeholders. Both, Enterprise A and Enterprise B, make extensive use of the internet and new technologies to reach their clients and convey their message. In the case of Enterprise A this has been possible thanks to the recruitment of young, educated, and dynamic marketing personnel with the right skills and knowledge. While revisiting and improving its web presence to adapt it to the changes the business and the market have experienced in the recent past, Enterprise B is also experimenting with social media to gather market knowledge and transfer information to a well targeted audience.

All the evidence discussed in this section highlights the importance of knowledge management in the improvement or development of business capabilities, and points out to the validation of theoretical propositions 3.1 and 3.2.

| | |
|---|---|
| Proposition 3.1 | A well-developed and well-functioning knowledge management capability helps improve the effectiveness and efficiency of business processes. |

| | |
|---|---|
| Proposition 3.2 | A well-developed and well-functioning knowledge management helps making business processes more flexible and adaptable to different market conditions. |

## 12.5 Conclusions

Evidence gathered from three international enterprises of different longevity, different sizes, and different export intensities, and the analysis of their unique circumstances, point out to the fact that internationalization does not require the development of unique capabilities. Consequently, it is possible to provide a positive answer to the first research question and to validate all its theoretical propositions. This positive answer provides support to Penrose's notion that domestic and international firms can be analysed with the same theoretical framework. Furthermore, this research work has developed a holistic model that encompasses all areas of the business and proved to be useful to analyse business competitiveness in domestic and international firms.

Internationalization poses many challenges to SMEs, but the challenges do not comprise the development of unique capabilities that are applicable only in international markets. The difficulties relate to the ability of the firm to develop and strengthen a set of dynamic capabilities to support the business success, instead of focusing mainly on operational capabilities. International markets increase the importance of third and second order dynamic capabilities, particularly those related to the identification of clients' needs, the crafting of a unique value proposition based on innovation, and the adaptation of the offer. Operational capabilities become necessary conditions to compete for the market, but not sufficient conditions to defeat competitors.

Enterprises that successfully develop and maintain high levels of international competitiveness, do so by developing effective and efficient dynamic capabilities with the right morphology. Of the three enterprises studied, Enterprise C is the one with lower levels of competitiveness and export intensity, as well as the one that is almost exclusively focused on the development and strengthening of operational capabilities. The remaining two enterprises (i.e. Enterprise A and Enterprise B), more competitive and with much higher export intensities, make dynamic capabilities the pillars that supports their strategic and operational endeavours.

The internationalization path of the three enterprises fits within the teachings of the Uppsala internationalization model, and the idea that the acquisition and use of experimental market knowledge is the key factor that determines success in foreign markets. Furthermore, the three enterprises studied in this research work have provided evidence to support Penrose' notion that growth is an evolutionary process led by the accumulation of knowledge. In line with the findings of other authors (Grant, 1991a; Laursen *et al.* 1999; Yli-Renko et al., 2002; Sapienza et

al., 2006; Nielsen, 2006), it is possible to confirm the strong relationship between knowledge management and business entrepreneurship, and the impact of knowledge management on the business' subjective productive opportunity set. Enterprise A and Enterprise B are confident that their capabilities would enable them to enter new markets where they have no previous experience. Furthermore, knowledge management mechanisms reduce the perception of risk and uncertainty, two key factors negatively affecting business internationalisation (Knight, 1921; Liesch *et al*., 2011).

All the evidence collected and the thorough analysis of the circumstances of each enterprise leads the author to confidently provide a positive answer to research question two in the cases when knowledge management processes and initiatives are linked to second order dynamic capabilities. In the cases where knowledge management processes and initiatives are linked exclusively to non-dynamic capabilities, or to dynamic capabilities of first order, the break of path-dependency cannot be verified.

This result highlights the importance of the morphology of the capability in the development of sustained competitive advantage. The existence of some kind of knowledge management capability and of adequate knowledge management enablers is a necessary but not sufficient condition for the expansion of the productive opportunity set. Unless the morphology of the capability is geared towards the support of the business strategic competence the company might never be able to break from path-dependency unless an external factor (e.g. the hiring of new managers that bring new ideas to the business) acts as catalyst.

In the case of Enterprise C the lack of adequate knowledge management mechanisms and the strong imprint of the founders led to specialization and to the reduction in the perception of risk and the costs of continuing on the same path. This eventually created a tendency to strengthen path-dependency. In the cases of Enterprise A and Enterprise B, two enterprises with strong knowledge management capability, there was an expansion of the businesses' absorptive capacity which led to the enlargement of the productive opportunity set and a reduction in path-dependency.

Evidence also suggest that research question three can be answered positively in those cases where the business puts in place a systematic and comprehensive knowledge management plan that outlines the specific capabilities that the business needs to develop. Knowledge management allows businesses to improve their capabilities by increasing the effectiveness and efficiency with which business processes are performed, and favours the identification of

innovative ways to implement those processes. The results are in line with view of Gold *et al*. (2001) who argue that businesses are able to improve its innovation, adaptability, efficiency and market responsiveness by implementing adequate knowledge management enablers and well-designed knowledge management processes.

In the cases of those enterprises which had a well-designed and well-implemented knowledge management capability, improvements at the process level have resulted in enhancements of the offer the enterprises take to the market along the critical positioning dimensions. Becerra-Fernandez *et al*. (2004) explain that the impact of knowledge management at the product level can be seen in the *value-added* content of the offer, and the extent to which the offer is composed of *knowledge-based products*. Enterprise C, the weakest firm in terms of its knowledge management capability, is selling a commoditized product, with little value-added, and to which the company contributes little knowledge, further to its craftsmanship and skills to mould steel. Enterprise A and Enterprise B are examples of knowledge-based entrepreneurship, as the sensing and seizing of business opportunities is driven by the acquisition and exploitation of unique technical knowledge. The real value of their offer is in the knowledge embedded in it, and the value added services (e.g. design and R&D) that complement the physical product they sell. Without any doubt, the processes that have had the greatest direct impact in the offer of these two enterprises are those that constitute the businesses' capabilities to innovate and to meet the attribute requirements. As we have seen above, these processes have been drastically affected by the business' knowledge management capability and the different mechanisms the companies put in place.

Determining whether knowledge management is capable of improving business performance is a difficult endeavour, and it is one that is beyond the ambitions of this work. Nevertheless, evidence suggests that the capability improvements achieved thanks to the implementation of different knowledge management mechanisms may have had a positive effect on business performance. The knowledge management initiatives applied to people and processes by Enterprise C and Enterprise B have clearly resulted in efficiency gains. In the cases of Enterprise B, knowledge management has had also an important impact on the effectiveness of its processes, and on the overall level of innovation the company shows. Enterprise A and Enterprise B make of knowledge and its management, the key building blocks of its business culture and operations. Both enterprises have shown spectacular results in terms of growth, profitability, market penetration, and innovation, even during periods of severe economic crisis.

# CHAPTER 13: CONCLUDING REMARKS AND IMPLICATIONS FOR FUTURE WORK

## 13.1 Empirical validation of the theoretical propositions

***The number and nature of business capabilities***

One important result of this research work is the validation of Penrose's (1987) notion that international businesses are natural extensions of domestic businesses, and therefore there is no need to develop a unique theoretical framework to analyse them. By constructing a model that explains capability development in domestic firms, and identifying the morphological changes those capabilities need to go through in order to enter foreign markets, we were able to study international businesses and confirm Penrose's claim.

The model presented in chapter five has proven to be a useful tool to understand how businesses develop competitive advantage in domestic and international markets, and to structure the thinking process when studying a business. Expanding Porter's generic strategies model allowed for a more detailed understanding of the strategic options available to the manager. The expansion into seven positioning dimensions has allowed a clear identification of the capabilities needed to build competitive advantage. The notion that competitiveness is built through competences, which in turn are constituted of capabilities supported by specific processes seems to be an adequate representation of reality.

The holistic nature of the model brings together in one theoretical paradigm all of the business' strategic and operational capabilities, as well as the necessary processes to develop them. The model identifies four competences as well as nineteen capabilities. The results of the empirical studies undertaken in this dissertation have not suggested that businesses may require additional competences or capabilities. This conclusion applies equally to enterprises active in domestic as well as in international markets.

Building on the work of other researchers, the model presents a hierarchy of capabilities with three levels of dynamic capabilities and one of operational capabilities. The novelty of this hierarchy is that it places knowledge management capability at the top of the pyramid as the *sine qua non* condition for the effective development of the remaining dynamic and operational capabilities. The empirical findings of this work support this hierarchy, with the important caveat that the morphology of the knowledge management capability is as important as its existence.

Other key dynamic capabilities identified are the capability to design and plan a business strategy that differentiates the business from its competitors, and the capability to innovate.

These two capabilities are an essential part of the strategic competence of the business and have been identified as second order dynamic capabilities. Finally, one important dynamic capability that is closely related to the final shape of the offer is that of meeting its required physical and functional attributes. This capability has been identified by the model as part of the business production competence and is considered as a first order dynamic capability. The exhaustive analysis of the cases has not suggested that additional dynamic capabilities related to the business strategic, marketing and production competences should be added to those already identified. Therefore, the list of dynamic capabilities proposed by the model could be considered exhaustive.

While the capabilities that domestic and international firms could develop are intrinsically the same, their complexity and their relevance vary from market to market. International markets may require capabilities that are more complex than their domestic market equivalent, therefore managers would need to implement important morphological changes to adapt them and ensure they remain effective and efficient. Furthermore, evidence suggest that the importance of dynamic capabilities increases as the business enters international markets. The dynamicity and strong competition prevailing in international markets require the enterprise to develop the necessary capabilities to attain maximum flexibility and design a unique offer to satisfy clients' needs. This can only be achieved through dynamic capabilities.

***Dynamic capabilities as drivers of enterprise competitiveness***

The notion of dynamic capabilities drive enterprise international competitiveness has been empirically validated, and in particular the importance of the knowledge management capability has been empirically established. The study of three international SMEs with different export intensities shows that the ability to create and transfer knowledge is one of the main differences of multinational firms compared with their domestic counterparts. Although causality is difficult to determine, particularly in dynamic contexts such as the ones that characterize strategy design and capability building in enterprises, evidence suggests that there is a strong link between the existence of a well-designed and well-implemented knowledge management capability and business competitiveness.

The identification of profitable business opportunities is the main driving force of economic growth and is supported by the business' ability to manage its knowledge. Within the knowledge management initiatives, particular relevance should be given to the processes by which the business learns and applies knowledge (Zahra *et al*, 1999). Knowledge management supports a

wide range of strategic and operational processes, and acts as an enabler for the effectiveness, efficiency, and adaptability of such processes. Knowledge management, by facilitating the acquisition, protection, and use of a wide range of knowledge assets, allows the business to innovate and respond quickly to customer expectations.

There are two channels through which the knowledge management capability influences business competitiveness. First, through the *strategic channel*. As proven by the positive answer to research question two, knowledge management has an effect on the business' strategic competence by helping the SME to break the path-dependency of previous strategic decisions. Knowledge management allows the SME to have a better understanding of its customers and markets, which facilitates the identification of new profitable business opportunities, the design of competitive business strategies, and the enhancement of innovation. Furthermore, knowledge management reduces uncertainly and perception of risk by allowing managers to change their perception of the market and the business. Second, the *continuous improvement channel*. As proven by the positive answer to research question three, knowledge management has an effect on the ability of the business to improve, update and upgrade its existing dynamic and operational capabilities. Evidence shows that knowledge management is more effective in achieving business competitiveness when applied to the development and strengthening of other dynamic capabilities and knowledge intensive processes.

If the knowledge management capability is able of achieving all these, then one should expect that it will have an impact on the business overall competitiveness. This issue is very complex and will deserve a research work focused exclusively on discerning this relationship. Moreover, the work done in this study could prove useful to guide such endeavour. As per our definition of competitive advantage, one should be looking to find evidence that the knowledge management capability is helping the business improve its ability to "*…consistently achieve above normal rents by continuously identifying profitable business opportunities, and seizing those opportunities through the design, production, and commercialization of a unique value proposition that meet the needs of existing, emerging, and imagined future clients better than the competition, allowing it to become the preferred supplier in the market and to shape future markets*".

Given the complexity of the definition it will not be possible to assess competitiveness by using financial indicators alone. At the heart of the definition of competitiveness is the ability of the business to mutate and adapt to ever changing market conditions by identifying new business opportunities and crafting a unique offer for its clients. It implies a forward looking attitude and

the ability to shape its future rather than be shaped and conditioned by market changes. A combination of financial and non-financial, quantitative and qualitative indicators is needed if one is interested in determining whether the business is more competitive as a result of the knowledge management capability.

One could get an idea of the effects of the knowledge management capability on the business' strategic competence by analysing the strategic evolution of the company, its vulnerability to market changes, and the scope and degree of success of its R&D efforts. Of the three cases analysed in this work, two of them could potentially be described as enterprises that have achieved some degree of competitive advantage. These two companies are also the ones with a well-developed knowledge management capability, and with a knowledge management capability designed to support the strengthening and development of other dynamic capabilities.

## 13.2 Limitations of this research work

As it could not have been otherwise, this research work has some limitations that in some cases relate to the model used to analyse businesses, and in some cases with the methodology used to gather and process evidence.

With respect to the model, it has been proven that it is a valuable tool to structure the thinking process of a researcher and a consultant hoping to analyse businesses, identify their weaknesses, and assess the business' competences, capabilities, and the overall degree of competitiveness. It is still to be determined whether the model could be used by business managers to guide their strategic and operational decisions related to the development of capabilities. Further research should be conducted to validate, complete and/or improve the suggested list of generic business processes that constitute each capability. Ideally, one should be able to identify a list of mutually exclusive and collectively exhaustive processes, which would then allow researchers and practitioners to diagnose business problems with high levels of accuracy. This work has initiated the work by suggesting an initial list of processes, but further research is needed with professionals specialized in the development of each competence. Last but not least, the model was developed with a single business enterprise in mind, that is, an enterprise that was active in one and only one possible combination of offer and market as this is the case of the large majority of SMEs. The model would then need to be extended to multi-business enterprises by incorporating aspects of corporate strategy and corporate management.

This way, the model could be used to analyse in a holistic manner enterprises of all sizes with more than one business.

When looking at the methodology selected for this research work, the case study methodology, one has to acknowledge that despite being the most adequate methodology for this type of research work, it also has its limitations. Certain aspects of this research work such as the identification of the cases, the availability of informants, the geographic scope, the nature and limits of analytic generalization, and the narrow time frame to conduct the field work imposed limitations to this research. All of these aspects were identified beforehand, accepted by the researcher, and taken into consideration during the design of the research protocol.

## 13.3 Potential for future work

The obvious next step would be to extend the study to incorporate a larger number of enterprises of different sectors, different sizes, and different geographical regions. This would have two objectives: First, to obtain further validation for the theoretical model used in this dissertation, which will include a validation of the number and nature of capabilities, as well as the proposed hierarchy of capabilities. Second, to enrich and validate the conclusions of this work - including the effects of knowledge management on path-dependency, the change in relevance of capabilities as the company moves from domestic to international markets, the importance of the capability's morphology, etc. -, with the aim of generalizing the results obtained in this work.

A second potential area of research would be to find solid evidence of the link between dynamic capabilities - particularly knowledge management – and business competitiveness in domestic and international markets. In order to do this the first step would be to construct a comprehensive measure of competitiveness that includes financial and non-financial indicators, and that takes into account the complexity of the concept.

Another important follow up work would be to continue the work on the identification of the business processes that constitute each capability. The objective would be to obtain a list of processes that is collectively exhaustive (i.e. they cover the entire domain of the business activities) and mutually exclusive (i.e. they do not overlap). If this is achieved, the model could be turned into a diagnostic tool that, based on a given strategy and a set of critical capabilities, identifies symptoms of process underperformance, and links it with inadequate resource management decisions. Such a tool would be of enormous value to business managers aiming

at improving their businesses' competitiveness and to business development professionals (i.e. business consultants) aiming to provide high quality services to their clients.

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# ANNEX 1

## A. Template questionnaires

This section presents the questionnaire template that was used as the basis for the questionnaires that were sent to the enterprises. These questionnaires are meant to be just one tool to gather information, but by no means the most important tool. The purpose of the questionnaires is twofold: On the one hand they were designed in such a way as to gather/confirm information about the companies and managers' perceptions about their businesses' operations in order to answer the three research questions. On the other hand, they were design to collect preliminary information to help the researcher better structure the face-to-face interview and identify areas where more in-depth research was needed. The information collected through these questionnaires is not expected to provide a definitive answer to the three research questions or to measure a specific construct (e.g. SME competitiveness). Their ultimate objective is to collect information that would guide the researcher in his work.

Several questions (i.e. A.6, A.9, A.10, A.11, B.1, B.2, and B.3) make use of Likert-type (Likert, 1932), ordered, one-dimensional scales to measure beliefs, attitudes and opinion. Likert scales are widely used in survey questionnaire research (Cook *et al*., 1981), being the 1-5 range the most common. All of these questions are structured in the same way: they present statements addressing one specific issue to which the respondent should indicate how much he or she agrees or disagrees with. In all cases, measures were prepared with the aim of achieving maximum consistency with the review of the literature performed in the first part of this dissertation and the definitions provided throughout this work, and structured following the model to understand businesses presented in chapter five. In that sense, it could be argued that in order to ensure content validity this questionnaire was prepared using a deductive approach as it benefitted from a classification scheme prior to data collection (Hinkin, 1995). Statements have been kept as simple and short as possible in order to facilitate understanding, double-barrel and negatively worded statements have been avoided. The researcher used his judgement and discretion to select among various scales in order to keep the questionnaire as short as possible to avoid respondent's fatigue.

The questionnaire was prepared to partly address the information needs identified in the data planning matrix (Table 34) and is organized in two parts. Part A seeks to gather general information about the company and its international activities. Answers to questions in Part A will, among other things, help answering research question one. Part B is design to throw light on the three research questions this work is addressing, and therefore it focuses on the business'

knowledge management capability, and its use for strategic and operational endeavours. Question B.1 is expected to provide evidence to make an initial assessment of the business knowledge management capability. Statements have been written in such a way as to collect information about the effectiveness, efficiency, and morphology of the different knowledge management processes identified in the theoretical part of this dissertation. Question B.2 attempts to gather information about the degree of satisfaction of knowledge users, and question B.3 seeks to understand the impact knowledge management has had on the business strategic and operational capabilities. The questionnaire concludes with question B.4 which aims at identifying the different tools enterprises use to manage knowledge, with the hope that such identification would help identify morphological differences among similar processes in different companies.

*NÚMERO DE CUESTIONARIO:*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

# CUESTIONARIO

## - Nombre de la empresa -

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Le agradecemos mucho que haya aceptado participar en este trabajo de investigación. Su contribución será de gran valor para intentar dilucidar cuáles son los factores que permiten a las pequeñas y medianas empresas vascas ser competitivas, particularmente en mercados internacionales. Todas sus respuestas serán tratadas con total confidencialidad y los resultados del trabajo serán utilizados única y exclusivamente con fines académicos, educativos y de investigación.

## Introducción

El siguiente cuestionario está dividido en dos secciones. La sección A esta compuesta de preguntas generales sobre la compañía. La sección B intenta recabar información sobre el grado de desarrollo de la capacidad de la empresa para gestionar información y conocimiento con fines estratégicos.

Es importante que conteste a todas las preguntas dado que toda información será útil para construir una idea acabada de la situación actual de la empresa y cómo la misma ha llegado a ser lo que es hoy en día. Todas las respuestas por usted provistas serán tratadas con la mayor confidencialidad.

## Sección A: Información general sobre la empresa y sus actividades internacionales

A.1. ¿En qué año se creó la empresa?

A.2 ¿En los últimos tres años ha sido capaz la empresa de cumplir con sus previsiones de ventas y facturación?

A.3. ¿En qué año comenzó a exportar?

A.4. ¿A cuántos países exporta actualmente?

A.5. ¿Cuáles son sus principales mercados?

A.6. Evalúe la importancia que ha tenido cada uno de los siguientes motivos en su decisión de exportar. Marque con una "X" la casilla correspondiente siguiendo la siguiente escala:
1. No relevante 2. Poco relevante 3. Relevancia media 4. Bastante relevante 5. Fundamental

| | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1 | Exportación como estrategia de crecimiento | | | | | |
| 2 | Diversificación de riesgo | | | | | |
| 3 | Características del mercado local: madurez, tamaño escaso, competencia, etc. | | | | | |
| 4 | Aprovechar capacidad excedente de producción; economías de escala | | | | | |
| 5 | Pedidos puntuales de clientes extranjeros | | | | | |
| 6 | Aprovechar la imagen, la calidad, la tecnología, etc. | | | | | |
| 7 | Búsqueda proactiva de nuevas oportunidades de negocio | | | | | |

A.7. Porcentaje promedio aproximado que representan las ventas en el exterior sobre la facturación total en los últimos cinco años:

| < 10% | 11% - 20% | 21% - 40% | 41% - 60% | 61% - 80% | 81% - 100% |
|---|---|---|---|---|---|
| | | | | | |

A.8. ¿Cuál o cuáles son las razones principales por la que los clientes extranjeros le compran a la empresa? Marque con una "X" las opciones que considere más adecuadas.

| Precios más bajos | Menores plazos de entrega | Tamaño de los pedidos | Atributos del producto | Canales de distribución | Calidad del producto | Marca - Nombre de la empresa |
|---|---|---|---|---|---|---|
| | | | | | | |

A.9. ¿En qué medida su estrategia de internacionalización ha provocado cambios en la estructura organizativa de la empresa?

| En absoluto | Pequeñas modificaciones | Modificaciones de grado medio | Modificaciones significativas | Totalmente |
|---|---|---|---|---|
| | | | | |

A.10. ¿En qué medida su estrategia de internacionalización ha provocado cambios en la política de la empresa referida a la investigación y desarrollo (I+D)?

| En absoluto | Pequeñas modificaciones | Modificaciones de grado medio | Modificaciones significativas | Totalmente |
|---|---|---|---|---|
| | | | | |

A.11. ¿Cómo calificaría los cambios que fue necesario realizar en las siguientes capacidades de la empresa a causa de la internacionalización? Marque con una "X" la respuesta que considere más adecuada.

| | **Nulo** | **Bajo** | **Medio** | **Alto** | **Total** |
|---|---|---|---|---|---|
| La capacidad de la empresa de identificar las necesidades de los consumidores | | | | | |
| La capacidad de la empresa para predecir el comportamiento y estrategias de potenciales competidores | | | | | |
| La capacidad de la empresa de diseñar una oferta que satisfaga a los clientes y que los competidores tengan dificultades en imitar | | | | | |
| La capacidad de alcanzar los niveles de calidad requeridos | | | | | |
| La capacidad de producir los volúmenes adecuados | | | | | |
| La capacidad de cumplir con los tiempos de entrega | | | | | |
| La capacidad de cumplir con los requerimientos físicos o funcionales del producto | | | | | |
| La capacidad de la empresa de obtener los recursos necesarios para gestionar la internacionalización | | | | | |
| La capacidad de la empresa de contactar y hacer llegar a los potenciales consumidores el mensaje de la empresa. | | | | | |
| La capacidad de la empresa para negociar con sus clientes y cerrar transacciones (p.ej.: fechas de entrega, precios, INCOTERMS, características del producto, volúmenes, niveles de calidad, etc.) | | | | | |

A.12. ¿Se diferencian las operaciones de producción destinadas al mercado doméstico de aquellas destinadas a mercados internacionales?

En caso afirmativo: ¿Dónde radica la diferencia?

A.13. ¿Se diferencian las operaciones de comercialización destinadas al mercado doméstico de aquellas destinadas a mercados internacionales?

En caso afirmativo: ¿Dónde radica la diferencia?

## Sección B: Gestión del conocimiento con fines estratégicos

B.1. A continuación se le presentaran una serie de afirmaciones sobre las cuales usted deberá evaluar su grado de acuerdo o desacuerdo. No existen respuestas correctas ni incorrectas dado que se le está preguntando su percepción sobre una situación determinada.

Para cada afirmación por favor escoja la alternativa que mejor describa a su parecer la situación en vuestra empresa y marque con una "X" la casilla correspondiente. La escala a utilizar es la siguiente:

1. Totalmente en desacuerdo 2. En desacuerdo 3. Ni de acuerdo ni en desacuerdo 4. De acuerdo 5. Totalmente de acuerdo

| | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1 | Somos capaces de determinar que conocimiento e información deberá estar disponible en el futuro cercano para la toma de decisiones estratégicas y operativas. | | | | | |
| 2 | Contamos con un sistema para la recopilación de datos, información y conocimientos necesarios para el desarrollo de una estrategia orientada al mercado doméstico. | | | | | |
| 3 | Contamos con un sistema para la recopilación de datos, información y conocimientos necesarios para el desarrollo de la estrategia de internacionalización. | | | | | |
| 4 | La mayor parte del conocimiento crítico para la toma de decisiones estratégicas proviene del exterior de la empresa. | | | | | |
| 5 | Muchos de los datos, información y conocimientos que recabamos provienen de periódicos, revistas especializadas y televisión. | | | | | |
| 6 | Nuestros proveedores, clientes y otros contactos externos son nuestra principal fuente de información para la toma de decisiones estratégicas. | | | | | |
| 7 | Los empleados son una fuente muy valiosa de información para la toma de decisiones estratégicas. | | | | | |
| 8 | El/los gerente(s) de la empresa son los encargados principales de recabar toda la información y conocimiento necesario para la toma de decisiones estratégicas. | | | | | |
| 9 | La capacitación y aprendizaje en el puesto de trabajo son altamente valoradas por la empresa. | | | | | |
| 10 | A los empleados se los motiva para explorar y experimentar en sus tareas diarias. | | | | | |
| 11 | La empresa cuenta con sistemas para capturar y procesar información referida a los procesos operativos de la empresa para luego utilizarla en la toma de decisiones. | | | | | |
| 12 | La empresa es capaz de realizar una comparación con otras empresas de forma de aprender de los éxitos y fracasos de las mismas. | | | | | |
| 13 | Somos capaces de recabar en todo momento la totalidad del conocimiento y la información necesaria para la toma de decisiones estratégicas y operativas. | | | | | |
| 14 | Los datos, información y conocimientos que la empresa recaba resultan ser en muchas ocasiones de escasa relevancia para la toma de decisiones estratégicas. | | | | | |
| 15 | Pasamos mucho tiempo revisando la relevancia de los datos e información que recabamos para la toma de decisiones estratégicas y operativas. | | | | | |
| 16 | La empresa cuenta con tecnologías que le permite realizar un mapeo de todo el conocimiento y la información disponible en la empresa. | | | | | |
| 17 | Por lo general nuestros competidores toman decisiones estratégicas basándose en fuentes de información similares a las que tiene acceso la empresa. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 18 | En comparación con la competencia, nos esforzamos más en la recolección de información y conocimiento para la toma de decisiones estratégicas. | | | | | |
| 19 | Contamos con personal dedicado total o parcialmente a la recolección de datos e información relevante para la toma de decisiones estratégicas. | | | | | |
| 20 | Nos resulta fácil determinar el grado de relevancia de los datos e información recabados para la toma de decisiones estratégicas. | | | | | |
| 21 | Solemos llamar a personal experimentado dentro de la empresa para validar los datos e información recabados de fuentes externas. | | | | | |
| 22 | Para la toma de decisiones estratégicas la empresa depende sobre todo de un reducido grupo de personas por su amplia experiencia en la industria y profundo conocimiento de la empresa. | | | | | |
| 23 | La empresa cuenta con mecanismos para absorber y codificar el conocimiento de sus empleados. | | | | | |
| 24 | La empresa es capaz de aprender de sus anteriores decisiones estratégicas y operativas, y no suele cometer dos veces el mismo error. | | | | | |
| 25 | Solo un grupo reducido de personas analiza los datos, información y conocimiento recabados para la toma de decisiones estratégicas y operativas. | | | | | |
| 26 | El equipo gerencial se reúne periódicamente para discutir y compartir información referida a la industria, los clientes y la empresa | | | | | |
| 27 | El equipo a cargo de la toma de decisiones estratégicas cuenta en todo momento con información adecuada y en tiempo real sobre el estado de cada una de las partes que componen de la empresa. | | | | | |
| 28 | La estructura organizativa de la empresa promueve la transferencia de nuevos conocimientos a través de los distintos departamentos y secciones. | | | | | |
| 29 | La mayoría de los datos e información recabada en el pasado para la toma de decisiones estratégicas puede ser fácilmente localizada. | | | | | |
| 30 | Documentamos en forma exhaustiva cada una de nuestras decisiones estratégicas. | | | | | |
| 31 | El equipo gerencial es capaz de ubicar fácilmente información referida a las operaciones de cada una de las partes constitutivas de la empresa. | | | | | |
| 32 | Existen mecanismos para determinar el grado de satisfacción de los empleados con la información y conocimiento disponible para la realización de sus tareas. | | | | | |
| 33 | La empresa cuenta con la tecnología necesaria para restringir el acceso a cierta información y conocimiento considerado crítico para el negocio. | | | | | |
| 34 | La empresa cuenta con políticas y procedimientos para proteger sus secretos comerciales. | | | | | |
| 35 | Aquel conocimiento e información que es de carácter restringido está claramente identificado. | | | | | |
| 36 | La empresa comunica a sus empleados la importancia de proteger el conocimiento y la información que reside dentro de la empresa. | | | | | |
| 37 | La empresa cuenta con los procesos para proteger el conocimiento y la información crítica de robo y uso inapropiado. | | | | | |
| 38 | La empresa destina un monto importante de recursos a proteger la información y conocimientos que genera y evitar que la competencia acceda a los mismos. | | | | | |
| 39 | La empresa cuenta con las herramientas necesarias para deshacerse de información y conocimientos obsoletos y reemplazarlos por nuevos conocimientos e información. | | | | | |

B.2. ¿Qué grado de satisfacción tiene con respecto a los siguientes tipos de información en el momento de tomar decisiones estratégicas relacionadas con la internacionalización del negocio? Marque con una "X" la respuesta que considere más adecuada.

| | **No procede** | **Nulo** | **Bajo** | **Medio** | **Alto** | **Total** |
|---|---|---|---|---|---|---|
| Información referente a las tendencias de mercado | | | | | | |
| Información referente a barreras arancelarias y no arancelarias | | | | | | |
| Información referente a las necesidades, expectativas y hábitos de compra de potenciales competidores | | | | | | |
| Información referente a las estrategias y el comportamiento de los potenciales competidores | | | | | | |
| Información referente a los medios de transporte y pagos internacionales | | | | | | |
| Información sobre canales de distribución alternativos en el mercado de destino | | | | | | |
| Información referente a los desafíos que implicará en términos de las operaciones de producción (p.ej: tiempos de producción, volúmenes, niveles de calidad, características del producto, etc.) | | | | | | |
| Información referente a los desafíos que implicará en términos de las operaciones de comercialización (p.ej.: la comunicación con los potenciales clientes, la protección de marcas y patentes, etc.) | | | | | | |
| Información referente a las necesidades de recursos para la internacionalización | | | | | | |

B.3. ¿Qué efecto han tenido sobre las siguientes actividades los esfuerzos llevados adelante por la empresa para mejorar la gestión de la información y el conocimiento? Marque con una "X" la respuesta que considere más adecuada.

| | No procede | Nulo | Bajo | Medio | Alto | Total |
|---|---|---|---|---|---|---|
| Innovación en la oferta de la empresa | | | | | | |
| Identificación de nuevas oportunidades de negocio | | | | | | |
| Coordinación de las actividades relacionadas con el desarrollo de nuevos productos o servicios de cada una de las partes constitutivas de la empresa | | | | | | |
| Anticipar potenciales oportunidades para desarrollar nuevos productos o servicios | | | | | | |
| Velocidad en la que las innovaciones llegan a ser comercializadas | | | | | | |
| Anticipar crisis o cambios drásticos en el mercado | | | | | | |
| Velocidad de adaptación a los cambios del mercado y de la industria | | | | | | |
| Reducir los tiempos que toma llevar un producto al mercado | | | | | | |
| Capacidad de reaccionar al arribo de nueva información relevante sobre el mercado | | | | | | |
| Tiempo que le toma a la empresa responder a nuevos requerimientos del mercado | | | | | | |
| Mejorar la eficacia y eficiencia de los procesos internos | | | | | | |
| Reducir la redundancia del conocimiento e información que circula por la empresa | | | | | | |

B.4. ¿Utiliza la empresa alguna variante de las herramientas abajo mencionadas? Marque con una "X" la respuesta que considere más adecuada.

| | Si | No |
|---|---|---|
| ***Asistencia entre pares:*** El propósito de esta herramienta es reducir los tiempos de aprendizaje y evitar errores que puedan conducir a resultados no deseados. | | |
| ***Revisión de aprendizaje:*** Al desarrollar sus tareas los empleados y equipos de trabajo generan conocimientos e ideas que deben ser capturadas y compartidas a medida que avanzan los proyectos para que puedan ser utilizadas en beneficio del equipo y de la empresa. El objetivo es que los equipos aprendan rápidamente a medida que desarrollan sus actividades y que puedan adaptar sus prácticas rápidamente. | | |
| ***Examen de ejecución:*** Esta es una técnica utilizada para capturar el aprendizaje posterior a la finalización de un proyecto. Permite a los miembros del equipo revisar lo hecho y sacar lecciones para mejorar la implementación de futuros proyectos. | | |
| ***Knowledge Café:*** Se refiere a reuniones de trabajo o talleres para el intercambio de experiencias de forma distendida, abierta, y evitando confrontar. El objetivo es compartir conocimientos y experiencias de forma voluntaria y participativa. | | |
| ***Plan de desarrollo de competencias para empleados:*** El objetivo de estos planes de desarrollo es monitorear el desarrollo de conocimientos y habilidades críticas que los empleados deben poseer. | | |
| ***Portal de conocimiento corporativo:*** Se refiere a plataformas corporativas donde los empleados pueden acceder a la información necesaria para realizar sus tareas así como para resolver problemas particulares. También puede incluir acceso a redes de conocimiento, comunidades de práctica, localizadores de expertos y foros de discusión. | | |
| ***Mapeo de conocimiento:*** Se refiere a la identificación y categorización del conocimiento existente en la organización. | | |
| ***Localizador de expertos:*** Permite a la empresa poner en contacto a aquellos que poseen un conocimiento específico con aquellos que necesitan resolver un problema relacionado con dicho conocimiento. | | |
| ***Programa de mentores:*** Permite desarrollar relaciones entre profesionales experimentados y profesionales noveles mediante las cuales los primeros transfieren conocimientos a los segundos para contribuir a su desarrollo profesional. | | |
| ***Comunidades de práctica:*** Son grupos de individuos (en ocasiones formados espontáneamente) que comparten preocupaciones e intereses, y se juntan para compartir y crear habilidades, conocimiento y experiencias. | | |
| ***Clúster de conocimiento:*** Se refiere a grupos de personas que se forman con el objeto específico (p.ej.: desarrollar nuevos productos, proponer cambios organizativos, etc.). La función de estos grupos crear, innovan, y diseminar conocimiento con fines específicos. | | |

**Fin del cuestionario**
**Muchas gracias por su participación**

## B. Interview sequence

***Structured interview with the business strategists***

The interview with the strategists of the business focused on strategic issues and the contributions of the knowledge management capability to strategy making. Furthermore, the the discussion also covered issues related to the different propositions resulting from the research questions. During the interview the discussion covered topics related to the knowledge management capability of the enterprise with the objective of providing further clarification and confirmation of the data obtained from the questionnaires, as well as to identify the timing and sequence of development of the knowledge management capability.

- ***STRATEGIC COMPETENCE***
  - *¿A su parecer cuáles son los aspectos críticos que distinguen a su empresa de la competencia?*

    *(p.ej.: las características de su oferta, su flexibilidad para adaptarse a los deseos de los clientes, sus métodos de producción, sus canales de distribución, el posicionamiento de su oferta, su acceso privilegiado a la información, sus recursos humanos, etc.)*

  - *¿A su parecer cuáles han sido los hitos más importantes de la empresa en lo referente a su internacionalización?*

  - *¿Podría describir como es el proceso de toma de decisiones estratégicas vis-à-vis la internacionalización del negocio?*

    *(Particularmente importante es comprender la secuencia de acciones que se llevan a cabo desde el momento en que la empresa reconoce la necesidad de cambio o la existencia de nuevas oportunidades hasta que se toma una decisión.)*

This question seeks to understand the morphology of the strategic competence, its constituent parts, allocation of decision-making power, and resource requirements, in order to be able to identify who is involved and what information and knowledge is needed at each step of the strategy making cycle.

  - *¿Ha habido <u>cambios en la orientación estratégica</u> en lo referente a los negocios internacionales desde el momento de la primera operación internacional?*

*(p.ej.: elección de nuevos mercados, nuevos productos, nuevo posicionamiento vis-à-vis las necesidades del consumidor, nueva segmentación)*

*En caso que la respuesta sea afirmativa:*

1. *¿Cuáles han sido esos cambios?*
2. *¿Qué motivo dichos cambios?*
3. *¿Cómo se dio cuenta de la necesidad de cambio?*

- *¿Ha habido <u>cambios tácticos</u> en lo referente a los negocios internacionales desde el momento de la primera operación internacional?*
  *(p.ej.: penetración de mercado, publicidad y promoción, precios, complejidad de la estrategia, etc.)*

  *En caso que la respuesta sea afirmativa:*

  1. *¿Cuáles han sido esos cambios?*
  2. *¿Qué motivo dichos cambios?*
  3. *¿Cómo se dio cuenta de la necesidad de cambio?*

- *¿Cómo ha evolucionado en el tiempo la <u>oferta exportable</u> de la empresa?*
- *¿Ha sido capaz la empresa de pasar de una oferta relativamente estandarizada para todos los clientes, a una oferta adaptada a las necesidades, expectativas y hábitos de cada cliente?*
  *En caso que la respuesta sea afirmativa:*

  1. *¿Qué motivo dichos cambios?*
  2. *¿Cómo se dio cuenta de la necesidad de cambio?*

- *¿En el momento de analizar la penetración en un nuevo mercado internacional y la forma en que dicha penetración ha de hacerse, suele la empresa copiar estrategias exitosas anteriores?*
- *¿A su parecer cómo van a evolucionar los negocios internacionales de la empresa en el futuro cercano?*

*(p.ej.: la empresa tiene pensado expandirse en nuevos mercados, mantenerse, replegarse o consolidarse en los mercados donde ya tiene presencia, cambiar de estrategia, introducir modificaciones operativas, etc.)*

- *En caso de que pretenda llevar adelante estrategias activas para consolidar o profundizar la internacionalización: ¿Qué acciones tiene pensado llevar a cabo para concretar este objetivo?*

➢ ***KNOWLEDGE MANAGEMENT CAPABILITY***

| | |
|---|---|
| Proposition 2.1 | A well-developed and well-functioning knowledge management capability favors the identification of a larger number of profitable business opportunities, and the identification of business opportunities of different nature. |

The first two questions (and their related follow up questions) attempt to understand what knowledge gathering tools and processes the company is using, and if specific tools and/or processes are used for international markets. Furthermore, These questions seek to understand if the business is forward looking and has an "early warning system" that scans the market for changes that may affect the strategy, or if the business is reactive to market changes.

- *¿<u>Qué procesos o herramientas</u> utiliza la empresa para obtener y procesar información sobre oportunidades de negocio internacionales?*
  *(p.ej. informacion referente a potenciales clientes, sus necesidades insatisfechas, la competencia, el marco regulatorio, la aplicación de las capacidades de la empresa a nuevos negocios, etc.)*
  Follow up questions:
  - *¿Qué tipo de información y conocimiento recaba la empresa para la toma de decisiones estratégicas?*
  - *¿Qué herramientas y procesos utiliza la empresa para determinar las necesidades insatisfechas, hábitos de consumo, y expectativas de sus clientes actuales o potenciales?*
  - *¿Cómo hacen los estrategas de la empresa para evaluar la situación en que se encuentran sus competidores, y cuáles serán sus próximos movimientos estratégicos?*
  - *¿Cómo hacen los encargados de diseñar una estrategia para la empresa para determinar la capacidad de la empresa para implementar dicha estrategia?*

- *¿Cómo se diferencian las actividades anteriormente mencionadas cuando se realizan pensando en mercados externos en lugar de en los mercados domésticos?*

The purpose of these questions is to determine whether strategists have a clear understanding of all the knowledge and information that is needed for strategy making, and to understand how that knowledge and information is gathered - processes and tools, whether the business favours internal or external sources, and if it collects and uses information from sources external to the business over and above what is publicly available to everyone. The answers to these questions will validate or contradict the responses given to the questionnaire previously completed by the strategists.

- *¿Cuándo fueron desarrolladas/adquiridas estas herramientas o procesos?*
- *En el cuestionario completado por usted anteriormente, indicó que en el momento de la toma de decisiones estratégicas no estaba del todo satisfecho con la cantidad o calidad de información y conocimiento referido a (Buscar en el cuestionario lo que cada uno de los entrevistados ha dicho).*

  *¿Podría explicarme con un poco más de detalle qué es lo que usted espera y porqué considera que no cuenta con dicho conocimiento e información?*

This question is multipurpose and may lead to further clarification questions being asked. The researcher seeks to understand:

1. The effectiveness and efficiency of knowledge management processes as perceived by the users of knowledge and information;
2. Determine whether strategists are aware of any gaps in the knowledge and information they receive;
3. Determine if they know where that information and knowledge may reside and by which means it could be obtained.

- *¿Cómo han cambiado con el paso de los años los procesos de obtención, procesamiento, transferencia y resguardo de la información y conocimientos críticos para la toma de decisiones estratégicas?*
- *¿Cuenta la empresa con un conocimiento más completo de sus clientes y de la competencia como consecuencia de la mejora en los procesos para recabar y procesar información proveniente del mercado?*

- *¿Ha sido capaz la empresa de identificar una mayor cantidad de oportunidades de negocio – dentro y fuera de la vecindad del negocio principal - (aunque haya decidido no explotarlas por el momento) como consecuencia de sus esfuerzos para recabar y procesar información y conocimiento?*
- *¿Ha sido capaz la empresa de desarrollar un mayor número de estrategias exitosas como consecuencia de la implementación o mejora de procesos de gestión del conocimiento?*

This question seeks to understand the evolution of knowledge management processes, their morphological changes, and the type of knowledge and information processes at each point in time. The goal is to gather sufficient evidence to link this evolution with changes in the strategic direction of the business.

- ***IMPACT OF KNOWLEDGE MANAGEMENT***

| | |
|---|---|
| Proposition 2.2 | A well-developed and well-functioning knowledge management capability favors international strategic ambidexterity and helps breaking path-dependency of international strategic decisions by allowing the business to think differently and address strategic decisions from an unconventional and/or new perspective. |
| Proposition 3.2 | A well-developed and well-functioning knowledge management helps making business processes more flexible and adaptable to different market conditions. |

- *¿Ha sido capaz la empresa de aumentar sus niveles de innovación como consecuencia de la implantación o mejora de procesos de gestión del conocimiento?*
- *¿Ha sido capaz el negocio de identificar las singularidades de cada mercado y diseñar una oferta específica para cada uno como consecuencia de la implementación o mejora de los procesos de gestión del conocimiento?*
- *¿Ha sido capaz la empresa de identificar un abanico más grande de respuestas estratégicas a los problemas a los que se enfrenta?*
- *¿Ha cambiado la forma de abordar y analizar los asuntos estratégicos de la empresa desde la implantación o mejora de los procesos de gestión del conocimiento?*

| | |
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| Proposition 2.3 | A well-developed and well-functioning knowledge management capability reduces perception of risk of undertaking new endeavors (by allowing the managers to better analyze business opportunities) and reduces path-dependency of international strategic decisions. |
| Proposition 2.4 | A well-developed and well-functioning knowledge management capability allows the manager make a better assessment of the current (and potential) production and marketing capabilities of the business, as well as the business current and future endowment of resources, leading to better strategic decisions. |
| Proposition 3.3 | A well-developed and well-functioning knowledge management capability helps the manager better understand the business endowment of resources, its current production and marketing capabilities, and make better operational and strategic decisions. |

- *¿Ha sido capaz la empresa de realizar mejores evaluaciones de los riesgos y las consecuencias de las distintas decisiones estratégicas como consecuencia de la implementación o mejora de los procesos de gestión del conocimiento?*
- *¿Ha habido cambios en lo referente a los tiempos en que se toman las decisiones, el tiempo transcurrido entre dos revisiones consecutivas de la estrategia, incremento de la confianza con la que se toman las decisiones, etc. gracias a la implementación o mejora de procesos de gestión del conocimiento?*
- *¿Tienen los gerentes, gracias a la implementación o mejora de los procesos de gestión del conocimiento, un mejor entendimiento del negocio y de cómo éste se diferencia de la competencia?*
- *¿Tienen los estrategas de la empresa un mejor entendimiento de la situación del negocio desde un punto de vista de las operaciones de producción y comercialización como consecuencia de la implementación o mejora de los procesos de gestión del conocimiento?*
- *¿Tienen los estrategas de la empresa un mejor entendimiento de los requerimientos de recursos que cada una de las decisiones estratégicas que toman y de las opciones que se les presentan como consecuencia de la implementación o mejora de los procesos de gestión del conocimiento?*
- *¿Ha sido capaz la empresa de reaccionar más rápidamente a los cambios en la industria (p.ej.: cambios en las regulaciones gubernamentales, entradas y salidas de competidores, fusiones y*

*adquisiciones, nuevas tecnologías, etc.), y predecir dichos cambios de forma más precisa como consecuencia de la implementación o mejora de procesos de gestión de conocimiento?*

- *¿Ha sido capaz la empresa de predecir cambios en la demanda de sus productos como consecuencia de la implementación o mejora en los procesos de gestión del conocimiento?*
- *¿Ha sido capaz la empresa de comprender y predecir mejor las estrategias y tácticas de sus competidores como consecuencia de la implementación o mejora de los procesos de gestión del conocimiento?*
- *¿Ha sido capaz el negocio de generar mayor volumen de negocio como consecuencia de la implementación de procesos de gestión del conocimiento?*

  *(Vía un incremento en los volúmenes por orden de compra o por un incremento en las órdenes de compra.)*
- *¿Ha sido capaz el negocio de asegurar o mejorar su rentabilidad a mediano y largo plazo?*
- *¿Cómo ha contribuido la gestión del conocimiento a la mejora de la productividad del negocio?*
- *¿Ha sido capaz el negocio de incrementar sus márgenes de ganancia como consecuencia de la implementación de procesos de gestión del conocimiento?*
- *¿Ha sido capaz el negocio de reducir el tiempo en que recibe el cobro por sus ventas?*
- *¿Ha sido capaz el negocio de hacer que sus precios sean menos reactivos a las acciones tomadas por los competidores?*

  *(Esto demostraría que la oferta del negocio ha mejorado a los ojos del cliente y que el grado de sustitutibilidad ha disminuido.)*

- *¿Ha sido capaz la empresa de ganar clientes y evitar que sus clientes opten por la competencia?*

***Structured interview with those fulfilling the role of production manager***

- ***PRODUCTION COMPETENCE***
  - *¿A su parecer cuáles son los aspectos críticos que distinguen a su empresa de la competencia?*

    *(p.ej.: las características de su oferta, su flexibilidad para adaptarse a los deseos de los clientes, sus métodos de producción, sus canales de distribución, el posicionamiento de su oferta, su acceso privilegiado a la información, sus recursos humanos, etc.)*
  - *¿A su parecer cuáles han sido los hitos más importantes de la empresa en lo referente a las operaciones de producción para los mercados internacionales?*

| | |
|---|---|
| Proposition 1.1 | Domestic and international firms develop the same set of competences and capabilities. |
| Proposition 1.2 | Internationalizing firms may require undertaking morphological changes in their capabilities in order to factor in the increase levels of complexity and dynamicity prevailing in international markets. |

- *¿Fue necesario dotar al negocio de recursos específicos para hacer frente al desafío de la internacionalización?*
- *¿Existen procesos o capacidades que se utilizan única y exclusivamente para mercados internacionales y no tienen su equivalente en los mercados locales?*
- *En el cuestionario usted comento que la internacionalización del negocio generó un impacto en ciertas capacidades de producción (Revisar las respuestas dadas por el gerente).*
  *¿Podría explayarse con un poco más de detalle sobre la naturaleza de dichos cambios, su origen, y su implementación?*

  1. *¿Cuáles han sido esos cambios necesarios en los procesos de producción?*
  2. *¿Qué motivo dichos cambios?*
  3. *¿Cómo se dio cuenta de la necesidad de cambio?*
  4. *¿Cómo se determina que cambios operativos han de ser implementados?*

- *¿Podría describir cómo se gestó e implementó el último cambio importante en las operaciones de producción?*

| | |
|---|---|
| Proposition 1.3 | The capabilities' importance and relevance may change when moving from domestic market to international markets. |
| Proposition 1.4 | Dynamic capabilities will become a critical success factor in international markets. |

- *¿Existen algunos procesos o capacidades de producción cuya importancia haya variado para el éxito del negocio a causa de la internacionalización del mismo?*
- *Basándose en su experiencia en el negocio:*

*¿Diría usted que la capacidad para adaptarse rápidamente a cambios en el mercado, tanto en términos operativos como en términos de la dotación de recursos, o la capacidad de identificar o explotar nuevos negocios, resulta más importante (o crítica) en los mercados internacionales que en el contexto local?*

- *En el momento de la primera internacionalización del negocio:*

  *¿Contaba la empresa con los niveles de flexibilidad, eficacia, y eficiencia que tiene actualmente?*

  *En caso de que la respuesta sea negativa:*
  *¿Considera que la internacionalización ha tenido un impacto relevante en la generación de estos cambios?*
- *¿Diría usted que la frecuencia con la que se realizan mejoras o modificaciones en los procesos productivos ha aumentado desde que la empresa está presente en mercados internacionales?*
- *¿Diría usted que la frecuencia con la que se realizan modificaciones en las características físicas o funcionales de la oferta del negocio es mayor desde que la empresa está presente en mercados internacionales?*

➢ ***KNOWLEDGE MANAGEMENT CAPABILITY***

| | |
|---|---|
| Proposition 3.1 | A well-developed and well-functioning knowledge management capability helps improve the effectiveness and efficiency of business processes. |

- *¿Qué herramientas o procesos utiliza la empresa para <u>identificar y obtener</u> toda la información y el conocimiento relevante para desarrollar o mejorar algún proceso o capacidad de producción?*

This question tries to unveil the knowledge and information identification and gathering mechanisms for production purposes. It seeks to understand whether the business is scanning its environment for the latest information on production techniques, etc.

- *¿Qué herramientas o procesos utiliza la empresa para que la información y el conocimiento necesario para mejorar o desarrollar nuevas capacidades de producción <u>llegue a aquellos que la necesitan</u>?*

This question tries to determine whether the business has a clear understanding of what knowledge is needed by whom and when. Furthermore, it seeks to determine if mechanisms exist for on-the-job training in order to keep skills and knowledge up to date, as well as knowledge storage and transfer processes.

- *¿Qué herramientas o procesos utiliza la empresa para capturar y transmitir el conocimiento que generan sus propios empleados en el transcurso de sus tareas de producción?*

This question seeks to understand whether the business has mechanisms to identify and transfer best practices, innovations, or improvements in operations originated internally.

- *¿Qué herramientas o procesos utiliza la empresa para evitar una pérdida de conocimiento o información técnica que pueda afectar las operaciones de producción?*

This question addresses a critical process in companies where differentiation (e.g. based on R&D, on unique production techniques, etc.) is the key factor in their quest for competitiveness, and it relates to knowledge storage and protection.

- *En el cuestionario que respondió anteriormente usted mencionó que no estaba del todo satisfecho con la información y conocimiento disponible con respecto a (Identificar las respuestas dadas por el gerente a las preguntas B.2.).*
  *¿Qué tipo de información y conocimiento necesitaría y como la utilizaría para mejorar los procesos de producción?*
- *¿Qué procesos serían necesarios implementar para que usted cuente con esta información y conocimiento y porqué la empresa no ha podido desarrollarlos hasta el momento?*

These questions attempt to validate the degree of satisfaction with available information and knowledge, verify that the manager understands how to use that information and knowledge, and to determine the reasons why it is not available at the moment.

- ***IMPACT OF KNOWLEDGE MANAGEMENT***

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|---|---|
| Proposition 3.2 | A well-developed and well-functioning knowledge management helps making business processes more flexible and adaptable to different market conditions. |

- *¿Acaso los procesos de gestión del conocimiento han hecho que el negocio este más al tanto de las distintas alternativas técnicas disponibles para la mejora de los procesos de producción que utiliza?*
- *¿Acaso los procesos de gestión del conocimiento han hecho que la implementación de cambios y mejoras operativas sean más efectivas y eficientes?*
- *¿Ha sido capaz el negocio de mejorar la calidad, reducir los tiempos de producción, aumentar los volúmenes de producción, mejorar las características físicas y funcionales, y/o reducir los costos de producción de su oferta exportable como consecuencia de la implementación de procesos de gestión del conocimiento?*
- *¿Ha sido capaz el negocio de reducir sus inventarios de suministros, materias primas, y productos en proceso de fabricación como consecuencia de la implementación de procesos de gestión del conocimiento?*

| | |
|---|---|
| Proposition 3.3 | A well-developed and well-functioning knowledge management capability helps the manager better understand the business endowment of resources, its current production and marketing capabilities, and make better operational and strategic decisions. |

- *¿Ha ayudado la implementación de procesos de gestión del conocimiento a tener una mejor comprensión de la relación, sinergias y complementariedades entre los procesos de producción?*
- *¿Considera que esfuerzos para conocer las tendencias del mercado están en concordancia con el posicionamiento estratégico de la empresa?*

  *(p.ej.: Una estrategia de diferenciación está asociada a un estudio sistemático del mercado en busca de oportunidades de negocio e innovaciones. Un posicionamiento basado en costo requiere la identificación de métodos que mejoren la eficiencia e innovaciones implementadas por la competencia.)*

- *¿Ha sido capaz el negocio de incrementar la productividad de sus recursos humanos como consecuencia de la implementación de procesos de gestión del conocimiento?*
- *¿Se ha reducido el costo y tiempo necesario para desarrollar o modificar los procesos de producción y las capacidades necesarias para que la empresa produzca su oferta exportable?*
- *¿Ha sido capaz la empresa de incrementar la productividad de sus recursos físicos como consecuencia de la implementación de procesos de gestión de la información?*

*(p.ej.: reducción de los tiempos muertos, reducción de las interrupciones de producción por causa de desperfectos, reducción en el tiempo de mantenimiento, etc.)*

***Structured interview with those fulfilling the role of marketing manager***

- ***MARKETING COMPETENCE***
  - *¿A su parecer cuáles son los aspectos críticos que distinguen a su empresa de la competencia?*

    *(p.ej.: las características de su oferta, su flexibilidad para adaptarse a los deseos de los clientes, sus métodos de producción, sus canales de distribución, el posicionamiento de su oferta, su acceso privilegiado a la información, sus recursos humanos, etc.)*
  - *¿A su parecer cuáles han sido los hitos más importantes de la empresa en lo referente a su internacionalización?*

| | |
|---|---|
| Proposition 1.1 | Domestic and international firms develop the same set of competences and capabilities. |
| Proposition 1.2 | Internationalizing firms may require undertaking morphological changes in their capabilities in order to factor in the increase levels of complexity and dynamicity prevailing in international markets. |

- *¿Fue necesario dotar al negocio de recursos específicos para hacer frente al desafío de la internacionalización?*
- *¿Existen procesos o capacidades comerciales que se utilizan única y exclusivamente para mercados internacionales y no tienen su equivalente en los mercados locales?*
- *En el cuestionario usted comento que la internacionalización del negocio generó un impacto en ciertas capacidades de comercialización (Revisar las respuestas dadas por el gerente).*

  *¿Podría explayarse con un poco más de detalle sobre la naturaleza de dichos cambios, su origen, y su implementación?*

  1. *¿Cuáles han sido esos cambios necesarios en los procesos de producción?*
  2. *¿Qué motivo dichos cambios?*
  3. *¿Cómo se dio cuenta de la necesidad de cambio?*
  4. *¿Cómo se determina que cambios operativos han de ser implementados?*

- *¿Podría describir cómo se gestó e implementó el último cambio importante en las operaciones de comercialización?*

| | |
|---|---|
| Proposition 1.3 | The capabilities' importance and relevance may change when moving from domestic market to international markets. |
| Proposition 1.4 | Dynamic capabilities will become a critical success factor in international markets. |

- *¿Existen algunos procesos o capacidades de comercialización cuya importancia haya variado para el éxito del negocio a causa de la internacionalización del mismo?*
- *Basándose en su experiencia en el negocio:*

  *¿Diría usted que la capacidad para adaptarse rápidamente a cambios en el mercado, tanto en términos operativos como en términos de la dotación de recursos, o la capacidad de identificar o explotar nuevos negocios, resulta más importante (o crítica) en los mercados internacionales que en el contexto local?*

- *En el momento de la primera internacionalización del negocio:*
  *¿Contaba la empresa con los niveles de flexibilidad, eficacia, y eficiencia que tiene actualmente?*
  *En caso de que la respuesta sea negativa:*
  *¿Considera que la internacionalización ha tenido un impacto relevante en la generación de estos cambios?*
- *¿Diría usted que la frecuencia con la que se realizan mejoras o modificaciones en los procesos de comercialización ha aumentado desde que la empresa está presente en mercados internacionales?*
- *¿Diría usted que la frecuencia con la que se realizan modificaciones en las características físicas o funcionales de la oferta del negocio es mayor desde que la empresa está presente en mercados internacionales?*

➢ ***KNOWLEDGE MANAGEMENT CAPABILITY***

| | |
|---|---|
| Proposition 3.1 | A well-developed and well-functioning knowledge management capability helps improve the effectiveness and efficiency of business processes. |

- *¿Qué herramientas o procesos utiliza la empresa para identificar y obtener toda la información y el conocimiento necesario para desarrollar o mejorar algún proceso o la capacidad de comercialización?*

The following question tries to unveil the knowledge and information identification and gathering mechanisms for marketing purposes. It seeks to understand whether the business is scanning its environment for the latest information on clients' needs, habits and expectations, on competitors' strategies and tactics, etc.

- *¿Qué herramientas o procesos utiliza la empresa para que la información y el conocimiento necesario para mejorar o desarrollar nuevas capacidades de comercialización llega a aquellos que la necesitan?*

This question tries to determine whether the business has a clear understanding of what knowledge is needed by whom and when. Furthermore, it seeks to determine if mechanisms exist for on-the-job training in order to keep skills and knowledge up to date, as well as knowledge storage and transfer processes.

- *¿Qué herramientas o procesos utiliza la empresa para a capturar y transmitir el conocimiento que generan sus propios empleados en el transcurso de sus tareas de comercialización?*

This question seeks to understand whether the business has mechanisms to identify and transfer best practices, innovations, or improvements in operations originated internally.

- *¿Qué herramientas o procesos utiliza la empresa para evitar una pérdida de conocimiento o información técnica, relacionada con clientes y competidores, que pueda afectar las operaciones de comercialización?*

This question addresses a critical process in companies where differentiation (e.g. based on privileged access to or knowledge of clients, on unique information about the market, etc.) is the key factor in their quest for competitiveness, and it relates to knowledge storage and protection.

- *En el cuestionario que respondió anteriormente usted mencionó que no estaba del todo satisfecho con la información y conocimiento disponible con respecto a (Identificar las respuestas dadas por el gerente a las preguntas).*

*¿Qué tipo de información y conocimiento necesitaría y como la utilizaría para mejorar los procesos de comercialización?*

- *¿Qué procesos serían necesarios implementar para que usted cuente con esta información y conocimiento y porqué la empresa no ha podido desarrollarlos hasta el momento?*

These questions attempt to validate the degree of satisfaction with available information and knowledge, verify that the manager understands how to use that information and knowledge, and to determine the reasons why it is not available at the moment.

➢ ***IMPACT OF KNOWLEDGE MANAGEMENT***

| | |
|---|---|
| Proposition 3.2 | A well-developed and well-functioning knowledge management helps making business processes more flexible and adaptable to different market conditions. |

- *¿Qué impacto han tenido sobre la mejora de los procesos de comercialización los mecanismos que la empresa ha implementado para la gestión del conocimiento? (Relacionar esta pregunta con la respuesta a la preguntas del cuestionario)*
- *¿Cómo identifica la empresa si los procesos o capacidades de comercialización han de cambiar, y que forma han de tomar, para llegar, conquistar y abastecer a los mercados internacionales?*
- *¿Qué información y conocimiento resultan críticos para que la empresa pueda llevar adelante sus actividades de mejora y desarrollo de procesos y capacidades?*
- *¿Acaso los procesos de gestión del conocimiento han hecho que el negocio este más al tanto de las distintas alternativas técnicas disponibles para la mejora de los procesos de comercialización que utiliza?*
- *¿Acaso los procesos de gestión del conocimiento han hecho que la implementación de cambios y mejoras operativas sean más efectivas y eficientes?*
- *¿Ha sido capaz el negocio de mejorar la calidad de su oferta exportable como consecuencia de la implementación de procesos de gestión del conocimiento?*
- *¿Ha sido capaz el negocio de reducir los tiempos de entrega de su oferta exportable como consecuencia de la implementación de procesos de gestión del conocimiento?*
- *¿Ha sido capaz el negocio de aumentar los volúmenes de las transacciones de su oferta exportable como consecuencia de la implementación de procesos de gestión del conocimiento?*

- *¿Ha sido capaz el negocio de comprender mejor las características físicas y funcionales que los clientes esperan de su oferta exportable como consecuencia de la implementación de procesos de gestión del conocimiento?*
- *¿Ha sido capaz el negocio de reducir los costos de comercialización de su oferta exportable como consecuencia de la implementación de procesos de gestión del conocimiento?*

| | |
|---|---|
| Proposition 3.3 | A well-developed and well-functioning knowledge management capability helps the manager better understand the business endowment of resources, its current production and marketing capabilities, and make better operational and strategic decisions. |

- *¿Ha ayudado la implementación de procesos de gestión del conocimiento a tener una mejor comprensión de la relación, sinergias y complementariedades entre los procesos de comercialización?*
- *¿Cómo se relacionan los esfuerzos para realizar un relevamiento del mercado con el posicionamiento estratégico de la empresa?*

  *(p.ej.: Una estrategia de diferenciación está asociada a un relevamiento sistemático del mercado en busca de oportunidades de negocio e innovaciones. Un posicionamiento basado en costo requiere la identificación de métodos que mejoren la eficiencia e innovaciones implementadas por la competencia.)*

- *¿Ha sido capaz el negocio de incrementar la productividad de sus recursos humanos como consecuencia de la implementación de procesos de gestión del conocimiento?*
- *¿Se ha reducido el costo y tiempo necesario para desarrollar o modificar los procesos de comercialización y las capacidades necesarias para que la empresa genere y cumplimente contratos de venta de su oferta exportable?*
- *¿Se ha detectado una mejora en la gestión de recursos financieros desde la implementación de procesos de gestión del conocimiento?*

  *(p.ej.: reducción en "deudores por cobrar", mejoras en el flujo de fondos, reducción en los tiempos de pago, etc.)*

- *¿Ha sido capaz el negocio de generar mayor volumen de negocio como consecuencia de la implementación de procesos de gestión del conocimiento?*
  *(Por medio de un incremento en los volúmenes por orden de compra o por un incremento en las órdenes de compra.)*

- *¿Ha sido capaz el negocio de asegurar o mejorar su rentabilidad a mediano y largo plazo?*
- *¿Ha sido capaz el negocio de hacer que sus precios sean menos reactivos a las acciones tomadas por los competidores?*

  *(Esto demostraría que la oferta del negocio ha mejorado a los ojos del cliente y que el grado de sustitutibilidad ha disminuido.)*

- *¿Ha sido capaz la empresa de ganar clientes y evitar que sus clientes opten por la competencia?*
- *¿Ha sido capaz el negocio de vender más y con más frecuencia a sus clientes actuales (y evitar que lo opuesto ocurra), inducir cambio de marca y atraer a los clientes de la competencia, ganar nuevos clientes entre aquellos que no consumían anteriormente el tipo genérico de producto?*
- *¿Existe la percepción generalizada de que el negocio es más exitoso como consecuencia de la implementación de procesos de gestión del conocimiento?*

  *(p.ej.: mayor rentabilidad, flexibilidad, innovación, etc.)*

- *¿De qué manera contribuye la capacidad de gestionar el conocimiento al incremento de la cuota de mercado?*
- *¿De qué manera contribuye la capacidad de gestionar el conocimiento al incremento en la tasa de crecimiento del negocio?*
- *¿Es el negocio más flexible desde un punto de vista operacional como resultado de la capacidad de gestionar el conocimiento?*

# ANNEX 2

## A. Rules of logical inference

| Rule | Mathematical notation | Interpretation |
|---|---|---|
| Modus ponens | $P \rightarrow Q$<br>$P$<br>$\therefore Q$ | P implies Q; P is asserted to be true, therefore Q must be true. |
| Modus tollens | $P \rightarrow Q$<br>$\sim Q$<br>$\therefore \sim P$ | P implies Q; Q is asserted to be false, therefore P must be false. |
| Modus ponendo tollens | $\sim(P \bullet Q)$<br>$P$<br>$\therefore \sim Q$ | P and Q cannot be true simultaneously; if P is true, then Q is false. |
| Biconditional introduction | $P \rightarrow Q$<br>$Q \rightarrow P$<br>$\therefore P \leftrightarrow Q$ | If P implies Q; and Q implies P; then P is true if and only if Q is true |
| Biconditional elimination | $P \leftrightarrow Q$<br>$\therefore P \rightarrow Q \bullet Q \rightarrow P$ | If P is true if and only if Q is true; then it is true that P implies Q and Q implies P. |
| Hypothetical syllogism | $P \rightarrow Q$<br>$Q \rightarrow R$<br>$\therefore P \rightarrow R$ | P implies Q; Q implies R, therefore it must be true that P implies R. |
| Disjunctive syllogism | $P \vee Q$<br>$\sim P$<br>$\therefore Q$ | If either P or Q is true and P is false, then Q is true. |
| Constructive dilemma | $(P \rightarrow Q) \bullet (R \rightarrow S)$<br>$P \vee R$<br>$\therefore Q \vee S$ | If P implies Q and R implies S and either P or R is true, then Q or S has to be true. |
| Destructive dilemma | $(P \rightarrow Q) \bullet (R \rightarrow S)$<br>$\sim Q \vee \sim S$<br>$\therefore \sim P \vee \sim R$ | If P implies Q and R implies S and either Q is false or S is false, then either P or R must be false. |
| Simplification | $P \bullet Q$<br>$\therefore P$ | If the conjunction P and Q is true, then P is true, and Q is true. |
| Conjunction | $P$<br>$Q$<br>$\therefore P \bullet Q$ | If P is true and Q is true, then the conjunction of P and Q is true |
| Disjunction introduction | $P$<br>$\therefore P \vee Q$ | if P is true, then P or Q must be true. |
| Disjunction elimination | $P \rightarrow Q \bullet R \rightarrow Q$<br>$P \vee R$<br>$\therefore Q$ | if P implies Q; and R implies Q; then if either P or R is true, then Q has to be true. |
| Absorption | $P \rightarrow Q$<br>$\therefore P \rightarrow (P \bullet Q)$ | if P implies Q, then P implies P and Q |

*Source: Own work*