

FORMULATING BUSINESS STRATEGY IN THE KNOWLEDGE ECONOMY CONTEXT: THEORETICAL FOUNDATIONS AND PRINCIPLES

This paper is suitable for Main Program

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Abstract

The continuous shift towards a knowledge-based economy has brought to the fore the issue of how organizations formulate their business strategies accommodating the complexity and dynamism of our environment. Managers are coming to realize that the firm's success depends on the competitive quality of its knowledge-based assets, and the successful application of these assets to its innovation and operational activities. The ability to create economic value from those knowledge assets is highly contingent on the well-formulated and well-implemented strategies.

The focus of our paper is to contribute to the development of a new theory to formulate business unit strategies within the knowledge economy context, where intangibles over time come to play a more central role in the wealth creating process. The activity-based view and the resource-based view are introduced as the building blocks of this theory. The concepts of business intelligence and strategic benchmarking are also considered as key components of our model.

Key words: well-formulated strategies, resource-based view, activity-based view, strategic competitive benchmarking, Extended SWOT analysis, Intellectual Capital Benchmarking System (ICBS).

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1. Introduction

Globalisation and the incredible technological advances, particularly in the areas of information and communications technology, created a “new era” that has reshaped the global economic environment. Those trends are changing the competitive structure of markets in such a way that the effectiveness of traditional sources of advantage is blurred. A New Paradigm economy emerged in which knowledge is seen as the critical factor of production (Carlucci *et al.*, 2004), the vehicle of economic benefits and the source of the nation’s prosperity and sustainable competitive advantage. In response, new models of business are emerging where the value chain have their hard nucleus in the creation, dissemination, application and leverage of intellectual resources.

Despite these critical changes in our societies – as in the past – all success business stories are based on a soundly formulated and effectively implemented strategy. The basic purpose of strategic management is to match the company’s strategy with the environment where the organization is operating in. Because the environment is constantly changing, effective strategic management requires a continuous flow of new theories suitable to the new scenarios. Structural changes transform the traditional business frameworks into insufficient and incomplete tools for developing a strategy. Traditional frameworks such as the BCG matrix, the Porter’s Five Forces and the SWOT analysis have had a lasting influence on strategic management and have been especially valuable for managers to develop and implement long-term strategy for organizations so as to build and sustain competitive advantage. However, those frameworks are becoming insufficient because their assumptions rely on the economic situation of eighties, characterised by more stable market structures, and where changes are not so rapid and profound as today.

One of the main challenges for the Knowledge Economy is how to use SWOT analysis efficiently and effectively in the present context. The purpose of our work is to develop the theoretical principles supporting the Extended SWOT analysis as a framework for formulating strategies at business level in an efficient and effective way to achieve success in the new context in which the main features are: (i) the importance of knowledge as the main source of sustainable competitive advantage; and (ii) the worldwide hyper-competition. The challenge is to move SWOT analysis away from the generalities of “strengths”, “weaknesses”, “opportunities”, and “threats” to more concrete factors and characteristics appropriate to the new reality. A specific methodology and information system framework – Intellectual Capital Benchmarking System (ICBS) –, focused on the value chain activities of both the operations and innovation processes, is developed.

Deploying scarce resources to create superior value when dealing with the innovation process is a very different task from that involved when dealing with the operations process. To create value the two processes require different resources and different core knowledge. For this reason, the ICBS has a specific methodology and information system framework for each of the processes (Viedma, 2002; 2004). The first is the Innovation Intellectual Capital Benchmarking System (IICBS) which is mainly focused on the value chain activities of the innovation process. The second is the Operations Intellectual Capital Benchmarking System (OICBS) which is mainly focused on the value chain activities of the operations process.

This theoretical discussion considers the value creation process in the knowledge economy and the principles behind the strategy formulation. We also discuss the theories and concepts that support the application of the Extended SWOT analysis as a framework designed to accomplish the dynamics of the knowledge economy. Building the ICBS relies on the principles and assumptions of the resource-based view and the activity-based view. The concepts of business intelligence and strategic competitive benchmarking are key components of our model.

This paper describes only the IICBS, although it indicates the way in which to move from the IICBS to the OICBS. The ICBS has been tested and successfully implemented in more than forty European enterprises.

2. Theoretical Background

The fundamental question in the field of strategic management is why some firms perform better than others and how those firms achieve and sustain competitive advantage. The answer to these questions may be interpreted in the light of two distinct paradigms: the resource-based paradigm and the activity-based paradigm. We purpose a theoretical approach that seeks to integrate those paradigms. In developing these ideas, our work presents a new perspective on the strategy formulation process in the context of knowledge economy.

The process of value chain in the knowledge economy

The notion of value chain helps us to understand the increase of value along the chain of activities in bringing a final offering to stakeholders. Value chain analysis looks at each link in the chain to see where value is added and how it might be increased. The idea is for companies to maximize value at minimum cost and to allocate resources to those activities that generate the most value – thereby maximizing profitability.

As mentioned by Eustace (2003), value chains always had a limited life in competitive markets, but are now eroding much faster than in the past. This forces firms to look for new factors of differentiation, namely “non-price” factors of competition. Value is now directly linked to the intelligence, the speed, and the agility that comes from a host of latent intangibles which represent a reservoir of potential talent and innovation that provides a source of competitive advantage. This set of intangibles or “intellectual capital”, creates value when its elements are combined and put into action, and degrades when they remain unused (Roos, 2005). This suggests that the value generated is a function of the way in which resources are managed. In other words, having a resource is not enough to create value. In order to create or leverage value, the resources have to be deployed effectively and efficiently.

Sveiby (2001) argues that the key to value creation lies with the effectiveness of knowledge transfers and conversions. Carlucci *et al.*, (2004) demonstrate that the generated value is the result of an organization’s ability to manage its business process and the effectiveness and efficiency of performing organizational processes are based on organizational competencies. Knowledge assets interact with each other to create competencies and capabilities, and it is often these interactions that provide a

competitive advantage because they make these assets difficult for competitor to replicate (Barney, 1991; Teece *et al.*, 1997; Marr, 2005). These value drivers are bundled together, and the interactions between them are varied, complex and dynamic making difficult to demonstrate the cause and effects relationships and its linkage to value outcomes. This perspective has been extended beyond the traditional value chain to other more complex ways of creating value, such as *value networks*, *value constellations*, and *value shops* (Haanes, 2000).

- *Value networks* create value by making different products and services available to customers. The value is derived from the network giving buyers access to sellers of what they want, and by putting suppliers in contact with customers who want their products. Examples of companies creating value through networks include commercial banks, airlines, postal agencies, insurers, brokers, and stock exchanges.
- *Value constellations* can be considered to be linked sets of different value networks.
- *Value shops* create value by solving unique problems for customers by using relevant competencies. Examples of companies that create value as 'shops' include accountants, academics, physicians, designers, lawyers, investment bankers, business consultants, and consulting engineers.

Formulating business strategies

Strategy, as a unifying theme that gives coherence and direction to the actions and decisions of an individual or organisation, has a fundamental role in success. Oxford dictionary (2004) defines strategy, as used in business administration, as a plan for successful action based on the rationality and interdependence of the moves of the opposing participants. This definition like most strategy definitions (e.g. Mintzberg, 1999; Quinn, 1999) highlights the perspective of movements of the opposing part (i.e. competitors) in the process of strategy formulation. Strategy is also understood as long range planning in a large number of studies (e.g. Porter, 1996; Johnson and Scholes, 2002). Long range planning allows an organization to build unique capabilities and skills, to clarify goals and policies of the company and allocate resources tailored to its strategy. Basically, strategy is about the choice of direction for the firm, and this choice has critical influence on its success or failure. It looks for answers to the following questions: Where is the organization now? Where does the organization want to be? What changes are among competitors? What courses of action will help us achieve our goals? – Since strategy determines the whole direction and action focus of the organization, its formulation cannot be regarded as the mere generation and alignment of programs to meet predetermined goals. The essence of strategy formulation is to deal with competitors.

Strategy can be formulated at several levels (Hofer and Schendel, 1978; Johnson and Scholes, 2002). One way of categorising these is to recognise that there are three levels of strategic decision making in organizations: corporate, business and operational. At corporate level, strategy concerns the direction, composition and coordination of the various businesses and activities within a large and diversified organization. At business level, strategy relates to the creation of competitive advantage and how to compete successfully in each of the businesses in which a company competes. At operational

level, strategy concerns with how the component parts of the organization in terms of resources, processes, people and their skills are pulled together to form a *strategic architecture* (Johnson and Scholes, 2002), defined as the combination of resources, processes and competencies to put strategy into effect. Our work focuses on the strategy at the business level.

The purpose of strategy is to ensure the achievement of competitive advantage (Rumelt, 1999) by defining the direction and scope of an organization (Hofer and Schendel, 1978). Because achieving, developing and sustaining the competitive advantage enable firms to earn superior profit, competitive advantage is the firm's ability to outperform its industry, i.e. to earn a higher rate of profit than that of industry.

Coyne (1986) argues that for a sustainable competitive advantage to exist, three conditions must apply:

- (i) Customers must perceive a consistent difference in important attributes, between the firm's products/services and the attributes offered by competitors;
- (ii) This difference is the direct consequence of a capability gap between the firm and its competitors;
- (iii) Both the difference in important attributes and the capability gap can be expected to endure over time.

The key point to emphasize from the Coyne's argument is that the attributes recognized by the customer are the direct consequence of firm's capabilities. According to Rumelt (1999) and Hofer and Schendel (1978) competitive advantage can be based on superior skills, resources or position at a market. More recently, strategic management literature puts the emphasis on intangibles as a source of competitive advantage (Itami, 1987; Teece *et al.*, 1997; Nahapiet and Ghoshal, 1998), because they are less visible and subsequently more difficult to understand and imitate than tangible resources.

In describing how organizations create and leverage competitive advantage, we note that it depends upon what the firm has, but not less important is what the firm does with what it has. In strategy management, two relevant perspectives still coexist in understanding how firms deploy scarce resources to create superior value (Haanes, 2000). These two perspectives are the resource-based view and the activity-based view (Porter, 1985, 1996). The two are complementary. The resource-based view focuses on what the firm *has*, whereas the activity-based view focuses on what the firm *does*.

The resource based view

In accordance with Grant (1998), a key common ingredient in all business success stories is the presence of a soundly formulated and effectively implemented strategy. Grant (1998) has stated that the starting point for the formulation of strategy must be some statement of the firm's identity and purpose. This generally takes the form of a mission statement that answers the question: 'What is our business?'. Traditionally, firms have defined their business in terms of the market they serve by asking: 'Who are our customers?' and 'Which of their needs are we seeking to serve?' Nevertheless, in a volatile world in which the identity of customers, their preferences, and the technologies for serving them are all changing, a market-focused strategy might not provide the stability and constancy of direction required as a foundation for long-term strategy.

When the external environment is in state of flux, the firm itself, in terms of its bundle of resources and capabilities, might be a much more stable basis upon which to define a sense of identity. Hence, a definition of the firm in terms of *what it is capable of doing* might offer a more durable strategic basis than a definition based upon the needs which the business seeks to satisfy (Quinn, 1992).

The above discussion points to the fundamental role of resources, capabilities and competencies in strategy formulation for entrepreneurial success in an environment of rapid change in technology and in the needs of customers and industry. A problem of nomenclature hampering the development of the resource-based view has been the variety of labels used to describe the firm's resource set.

Resources are inputs into the production process and they can be tangible or intangible (Itami, 1987). Capabilities may be understood as the way resources, talents and processes are combined and used (Teece *et al.*, 1997). The term "competencies" appears frequently in the literature preceded by the adjectives, core and distinctive. Sometimes is interchangeably used with the term capability which, in turn, is also frequently preceded by the adjective core. Although there are subtle differences in focus and interpretation, all have a common approach to strategic management.

Tangible resources are concrete, tractable, and easy to identify and evaluate. They include the financial and physical assets that are identified and valued in a firm's financial statements, such as capital, factories, machines, raw materials and land. Intangible resources are generally more difficult to measure, evaluate, and transfer. They include skills, knowledge, relationships, motivation, culture, technology, and competencies. Lev (2001) states that "intangibles are frequently embedded in physical assets (e.g. knowledge contained in technology) and in labour (e.g. tacit knowledge), leading to considerable interactions between tangible and intangible assets in the creation of value". Resources are not usually productive in isolation. They become productive in collaboration in the context of a team dedicated to a specific purpose. Another important element of the resource-based view is that not all resources are of equal importance or possess the potential to be a source of sustainable competitive advantage. Alternative classifications of barriers to resource duplication abound in the organizational literature. For example, Barney (1991) proposes that advantage-creating resources must meet four conditions, namely, value, rareness, inimitability and non-substitutability, while Grant (1991) argues that levels of durability, transparency, transferability and replicability are important determinants. Further, Reed and DeFillippi (1990) suggest three sources of ambiguity and advantage, mostly, tacitness, complexity and specificity. In short, resources are likely to be inimitable or imperfectly imitable where their relationship with the advantage is poorly understood.

Capabilities have been proved more difficult to define and are often described as invisible assets (Itami, 1987). Essentially, capabilities comprise the skills of individuals or groups as well as the organizational routines and interactions through which all the firm's resources are coordinated (Grant, 1991). Rather than single discrete skills and technologies, capabilities are bundles of constituent skills and technologies (Tovstiga and Birchall, 2002) that create disproportionate value for the customer, differentiate its owner from competitors, and allow entrance to new markets (Hamel and Prahalad, 1994). A more dynamic perspective is introduced by Teece *et al.*, (1997:516) focusing on how some organizations first develop firm-specific capabilities and how they renew

competencies to respond to shifts in the business environment. The authors define dynamic capabilities as “the firm’s ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environment”.

All of the above mentioned tangible and intangible resources represent a basis for the creation of economic value, but competencies, in particular, have received special attention in the recent strategy literature as being potential source of sustained competitive advantage. Competencies are the means by which a firm deploys resources in a characteristic manner in order to compete (Haanes, 2000). Thus, professional competencies integrate professional skills and knowledge, and organizational competencies include a firm’s knowledge, routines, and culture. Some authors, especially Prahalad and Hamel (1990), have distinguished particular competencies, which they call “core competencies”, as being fundamental to the firm’s performance and strategy. “Core competencies”, according to these authors, are those that make a disproportionate contribution to ultimate customer value, or to the efficiency with which that value is delivered. Core competencies thus provide a basis for entering new markets (Prahalad and Hamel, 1990:81).

The authors put the cumulative development of specific competencies at the centre of the agenda of corporate strategy because “the real sources of advantage are to be found in management’s ability to consolidate corporate-wide technologies and production skills into competencies that empower individual businesses to adapt quickly to changing opportunities”. Hence, the sustainable competitive advantage of firms resides not in their products, but in their core competencies. Furthermore, those core competencies feed into more than one product, which, in turn, feed into more than one business unit. As mentioned by Tidd (2005:6) “core competencies are the roots of products and services, which suggest that the most appropriate level of analysis and investment is neither the product nor the market, but the core competencies”.

Adopting a slightly different perspective, the present paper uses the term “core competencies” to refer to a unique bundle of intangible assets that are the basis of the definite, sustainable, competitive advantages (Andriessen, 2001). In adopting this perspective, the present study uses the terms “core competencies” and “core capabilities” interchangeably and also considers the term “intellectual capital” to be an equivalent expression. This approach is in agreement with Sullivan (2000) who defined intellectual capital as knowledge that can be converted into profits or knowledge that produces value. Figure 1 summarizes the above discussion on resources and capabilities, and Figure 2 shows the major intangible assets within a core competence (Andriessen, 2001).

Figure 1. Resources and capabilities of a firm

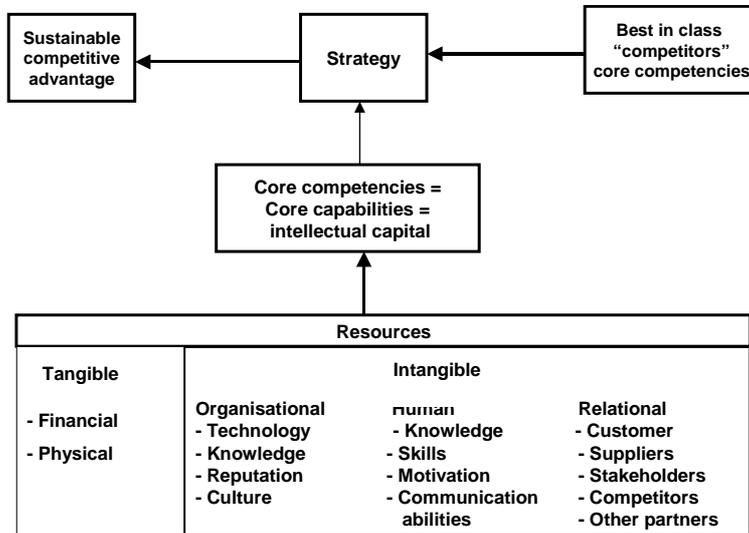
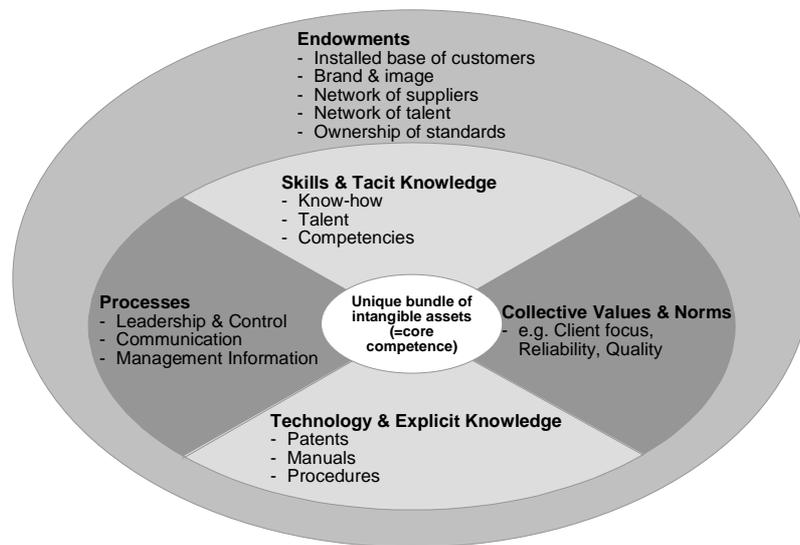


Figure 2. A core competence as a unique bundle of intangible assets



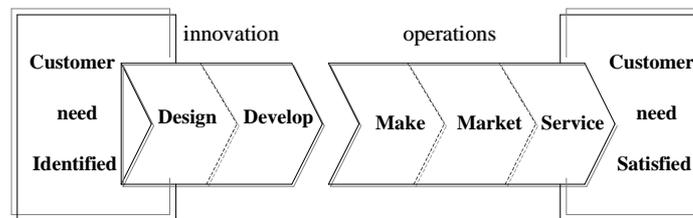
Source: Andriessen (2001)

The activity-based view

The activity-based view has mainly been concerned with seeing firms as value chains that create value by transforming a set of inputs into more refined output (Porter 1985, 1996). Nevertheless, to be more specific, we need to consider how value is created in the internal business process value chain. The business process value chain can be divided into major processes: (i) the innovation process; and (ii) the operation process.

The innovation process is made up of product design and product development, whereas the operations process is made up of manufacturing, marketing, and post-sale service. Figure 3 illustrates the business process value chain.

Figure 3. Business process value chain



Source: Adapted from Kaplan and Norton (1996)

The traditional perspective has focused on the operations process. According to the short-term view, value creation begins with the receipt of an order from an existing customer for an existing product or service, and ends with the delivery of the product to the customer (Kaplan and Norton, 1996). In this case, value is created through operations core competencies.

However, viewed from the perspective of the innovation process, value creation is a long-term process which, for many companies, is a more powerful driver of future financial performance than the short-term operations process. This view requires an organisation to create entirely new products and services that will meet the emerging needs of current and future customers. For many companies, their ability to manage successfully a multi-year product-development process, or to develop a capability to reach entirely new categories of customers, can be more critical for future economic success than managing existing operations efficiently, consistently, and responsively. Value is thus created through innovation core capabilities. Specifically, innovation value chain is about to translate competencies into new processes, products and services, and learning from successful and unsuccessful projects, use this experience to improve existing competencies and, where necessary, develop new competencies (Tidd, 2005).

In summary, building core competencies is not done in a vacuum, but is done in the business process value chain in which resources are deployed in a characteristic manner in order to compete. The resource-based view and the activity-based view are therefore complementary. Taken together, they explain the process of creating value and securing a sustainable competitive advantage.

3. Building the Intellectual Capital Benchmarking System (ICBS)

As previously noted, in today's knowledge economy the resource-based view and the activity-based view are the fundamental cornerstones that determine company competitiveness. The resource-based view (Barney, 1991, 1999; Grant, 1991, 1998; Teece *et al.*, 1997) stresses that, in turbulent times sustainable competitive advantages are mainly due to the intangible resources of a company or, more specifically, to core competencies (which are, in practice, equivalent to core knowledge). However, resources *per se* do not create value, and because the resource-based view focuses only on what the firm *has*, this view does not, in isolation, adequately explain *how* to deploy scarce resources to create superior value. In this sense, the activity-based view (Porter 1985, 1996) is a necessary complementary perspective which focuses on what the firm *does*, and takes into account that value creation results from the activities to which the resources are applied. If core knowledge is the key strategic asset, improving existing core knowledge and building new core knowledge are fundamental tasks. Building and improving core knowledge require organisational learning capabilities, including the appropriate learning structures and information systems.

World-wide industry hyper-competition has ensured that, in order to remain competitive, organizations need not only to protect their interests but also to expand their interests. They need to out-innovate their competitors. For doing this, business intelligence and strategic competitive benchmarking have become essential learning tools. That valuable knowledge can be obtained only from: (i) a business intelligent process that gathers, processes, interprets and communicates the economic, social, technical and political information needed in the decision-making process; and (ii) a strategic benchmarking process that provides a systematic and frequent comparison with the world-class processes and core competencies of competitors in the same business segments. In fact, organisations are now competing on the basis of core knowledge and core competencies. Opportunities and threats come mainly from competitors who offer the best in the same industry segment.

Business intelligence process

An important issue to take into account for formulating a sound strategy is the existence of a competitive or business intelligence process. Business intelligence is the activity of monitoring the firm's external environment concerning the information that is relevant for the decision-making process in the company (Gilad and Gilad, 1988). The aim is to use the strategic intelligence in the decision-making process. That is, to make intelligence actionable, capable of guiding decisions in organizations. Competitive intelligence under the strategic intent of competing and out-innovating the competitors effectively drives more intelligence into strategic decision making, which will give the company a competitive edge. Hence, competitive intelligence must be a functional part of the strategic management system (Fuld, 1995).

According to Gilad and Herrings (1996), most organizations are in a reactive mode, focused on identifying events after they take place rather than having a system of "early warning" in place. Operating in a highly competitive environment, organizations have to develop their "sensors" to operate like a "nervous system", capable of triggering the company reflexes for reaction to danger or need. Competitive intelligence helps

organization to identify threats in the external environments capable of impacting negatively on the future of the company, and identify new opportunities for the organization, leading to innovation and ultimately benefiting the competitive status of the organization. Fuld (1995) explains that competitive intelligence is applied in corporate environments focussing on issues that may impact on the competitive environment of the institution, aimed at creating an early intelligence capability and supporting decision-making.

Business intelligence mitigates a company's risk to lose business opportunities because, according to Gilad and Herrings (1996), that allows: (i) to build a portfolio of competitive advantages against competitor's sustainable advantage; (ii) to create a competitive surprise against incumbents; (iii) to change the rules in order to unseat a leader; (iv) to leverage resources through the use of partners; and (v) to defend against competitors attempting to achieve surprise, the creation of new advantages, the changing of the rules of engagement and the luring of partners. In this context, competitive intelligence supports the strategic process in organization, acting as "sensor" to indicate to top management whether the organization is still competitive. At the same time, company vision, mission and strategic objectives act as constant guide for the competitive intelligence process.

Strategic competitive benchmarking

Benchmarking is a widely recognised critical tool for decision makers, who constantly look for techniques that enable them to improve the quality of their decisions. Drew (1997) demonstrates that all the winners of the Baldrige award score highly on the use of benchmarking. For a more comprehensive review of the literature on benchmarking we suggest that the reader follow the work of Dattakumar and Jagadeesh's (2003).

For the activities as well as the intangible assets to really be competitive and provide a sustainable competitive advantage, a benchmark exercise needs to be done for the firm to realize if it is achieving that competitiveness at all or not. It involves looking outward (industry, region or country) to examine how others achieve their performance levels and to understand the processes they use.

Benchmarking world-class performance starts with competitive analysis, but goes far beyond it. While competitive analysis focuses on product comparison, benchmarking looks beyond products and services to the operating and management skills that produce the products and services, and usually requires the active participation of all organization's members. In this sense, benchmarking is a tool for the encouragement of change, which primary objective is to obtain and maintain high levels of competitiveness. According with Spendolini (1992) competitive benchmarking involves identification of the products, services and work process of the organisation's direct competitors. The objective of competitive benchmarking is to identify specific information about the competitor's products, processes and business results and then make comparisons with those of the own organisation. Competitive benchmarking is also useful in positioning the organisation's products, services and processes relative to the marketplace.

When we move from competitive benchmarking, to strategic competitive benchmarking (Watson, 1993) we mainly focus on core activities, core competences and specially core knowledge. This suggests that the SWOT analysis should move away from the generalities of “strengths”, “weaknesses”, “opportunities”, and “threats” to more concrete factors and characteristics appropriate to the new reality.

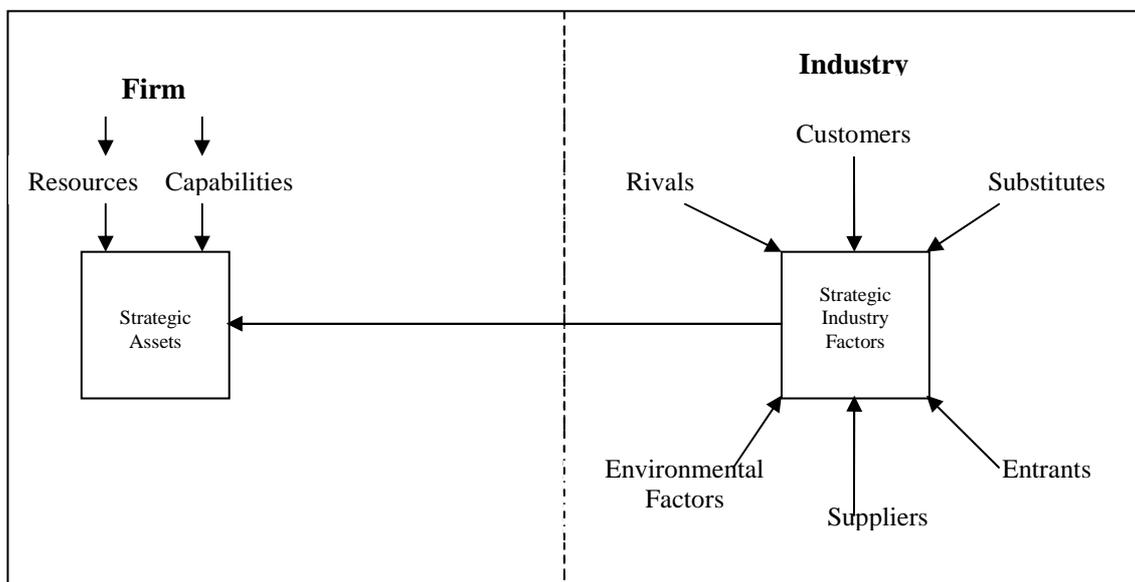
The Extended SWOT Analysis

The SWOT analysis is widely recognized in the strategic management literature as a systematic way of identifying relationships between strengths, weaknesses, opportunities and threats, and providing the basis for formulating strategies on these relationships.

McGahan and Porter (1997) point out that business performance differences can be explained by the resource-based view but it is misguided to disconnect the influence of organization from the industry and competitive context in which firm operates.

In the same vein, Amit and Schoemaker (1993:35) state that “the resource-based perspective complements the industry analysis framework”. Bearing this in mind, Roos (2005) presents the Amit and Schoemaker’s (1993) theory of integrated strategy, a theoretical approach that seeks to integrate the competitive forces and the resource-based paradigms of competitive advantage, as depicted in Figure 4.

Figure 4. Amit and Schoemaker’s theory of integrated strategy



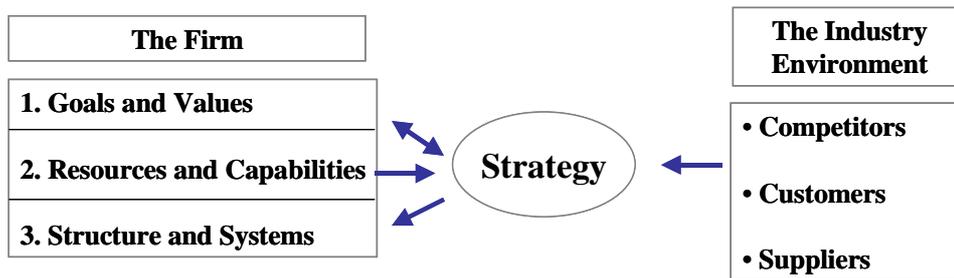
Source: Roos (2005:130)

Strategic development process based on the competitive forces paradigm starts by looking at the relative position of a firm in a specific industry, i.e. we first consider the firm’s environment, and then we try to assess what strategy is the one that maximize the firm’s performance. By contrast, the resource-based view can be seen as an “inside-out” process of strategy formulation. We start by looking at what resources the firm

possesses, and then we assess their potential for value generation and end up by defining a strategy. In short, the resource-based view of the firm provides a conceptually grounded framework for assessing strengths and weaknesses and enables strengths or weaknesses to be examined in terms of the criteria for establishing sustainable competitive advantage.

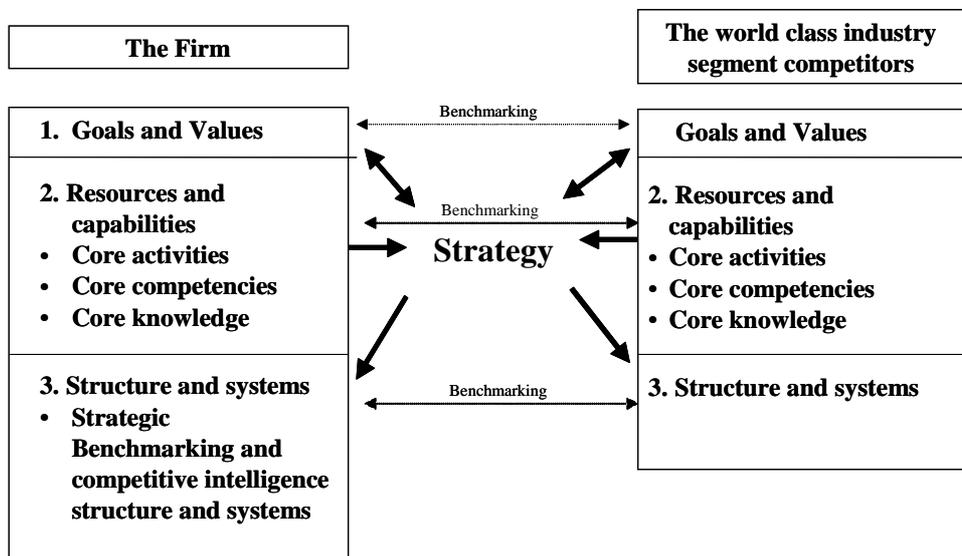
Further to the discussion above, the SWOT analysis framework moves from that shown in Figure 5 to that shown in Figure 6. In effect, there is a change from simple SWOT analysis to an extended SWOT analysis.

Figure 5. SWOT analysis



Source: Robert M. Grant 1998.

Figure 6. Extended SWOT analysis.



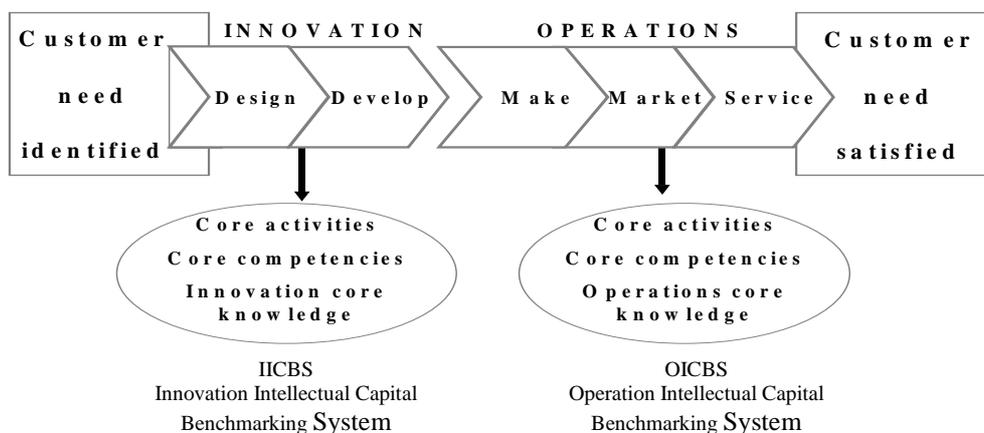
The extended SWOT analysis gives us the main factors to consider when seeking strategies that leading to entrepreneurial excellence. The main factors of the extended SWOT analysis also determine the information system required to measure and manage those factors. In other words, the main factors produce the Intellectual Capital Benchmarking System (ICBS), an intellectual capital strategic management information system framework developed by Viedma (2002; 2004).

Nevertheless, as previously noted, strategy formulation in dynamic environments, even those mainly based on core capabilities, has different features when dealing with the innovation process than when dealing with the operations process. Core capabilities can be very different in the two processes.

The innovation process points to new products and services through the innovation value chain in which innovation capabilities are basic and fundamental. Core capabilities represent a potential and, therefore, cannot contribute to competitiveness unless they are successfully translated into new processes, products and services. This is the role of innovation management. The Innovation Intellectual Capital Benchmarking System (IICBS) has a specific system for the innovation process.

The operations process, which produces ordinary products and services through the systematic and repetitive operations value chain, also requires core competencies and core capabilities to be competitive. However, these competencies and capabilities will probably be of a different nature from the ones mentioned above in the discussion of the innovation process. ICBS also has a specific process for the operations value – the Operations Intellectual Capital Benchmarking System (OICBS). Figure 7 illustrates the business process broken down into two constituent parts, and the specific methodologies and information systems that correspond to each of the constituent parts.

Figure 7. Business process value chain.



In summary, the general model of the ICBS can be divided into two partial models. The first, the IICBS, refers to innovation core activities and core knowledge, whereas the second, the OICBS, refers to operations core activities and core knowledge.

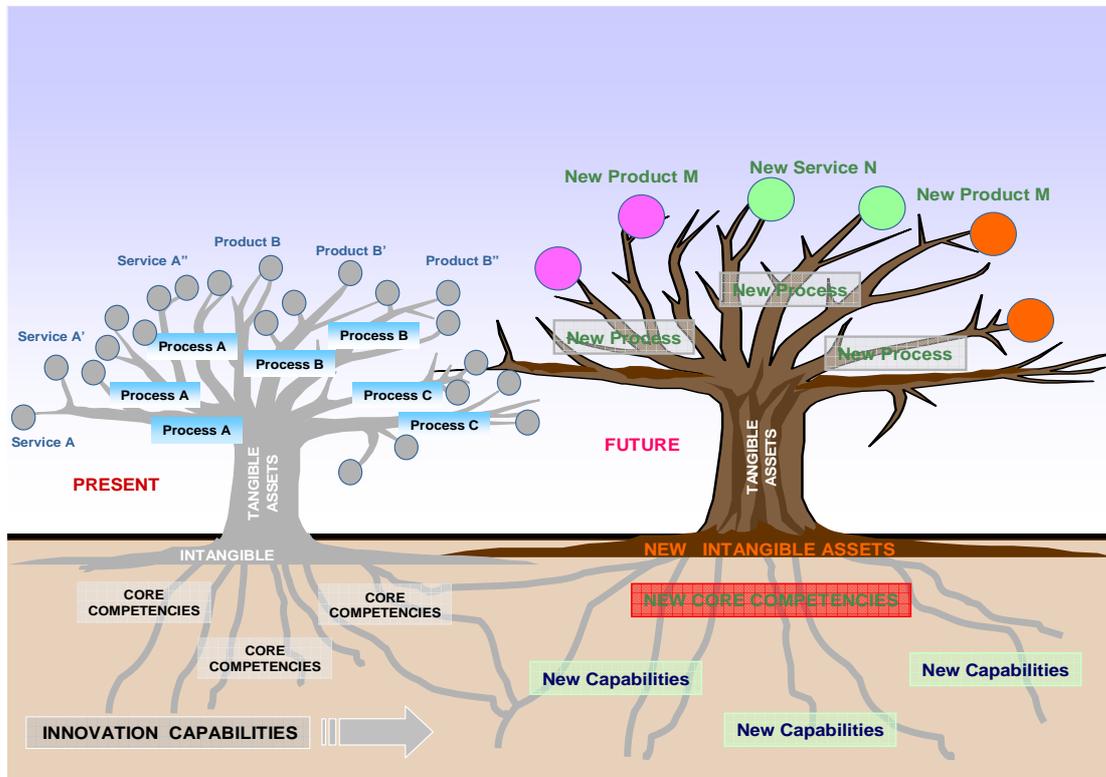
The two models have a similar structure and they work in a similar way, but there is a fundamental difference. The IICBS model refers to the core activities and core knowledge of the different projects that make up the innovation process. In contrast, the OICBS model refers to the core activities and core knowledge of the different business units that make up the operations process.

This paper describes only the IICBS. However, the structure and function of the OICBS can be easily deduced because the systems are very similar and work in an analogous fashion.

4. (IICBS) Innovation Intellectual Capital Benchmarking System general framework.

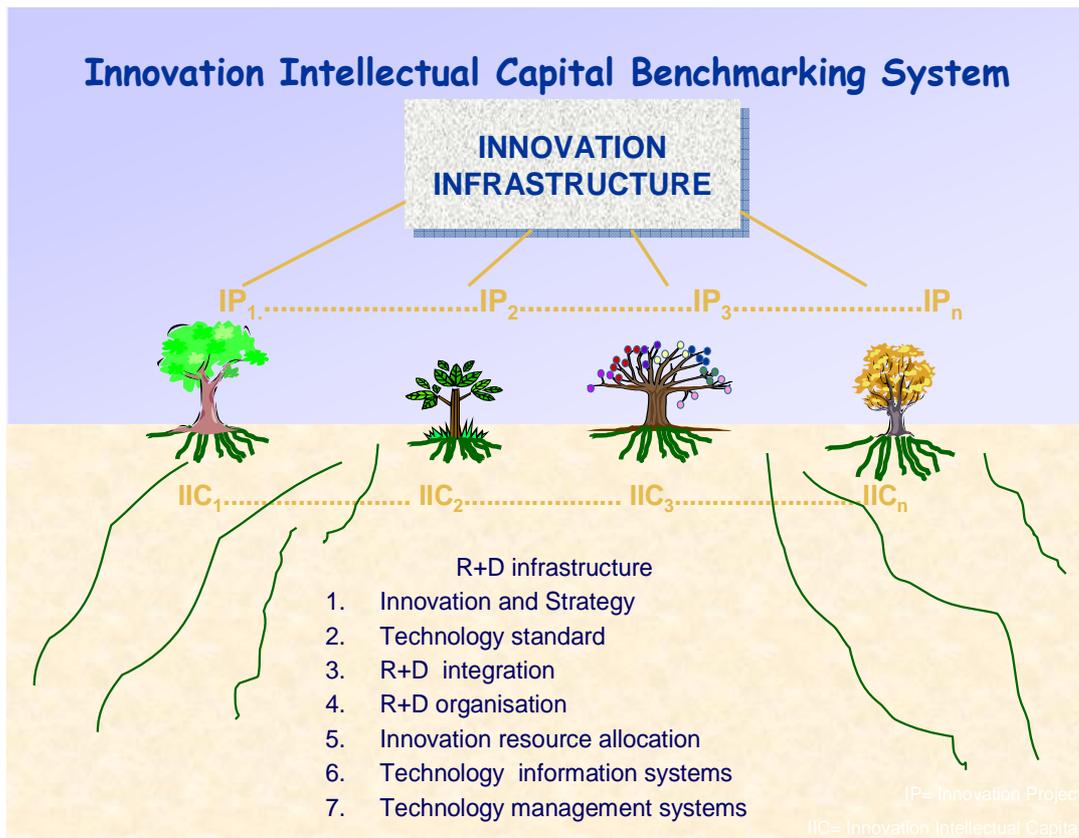
Using the metaphor of a tree, we can consider the company that performs innovation activities as a new tree in which the visible part (that is to say, the trunk, the branches, and the fruits) corresponds to the tangible assets of the innovative company (see Figure 8). The invisible part of the tree (that is to say, the roots of the tree below ground) corresponds to the intangible assets of the innovative company. The two parts – tangible and intangible – are inseparable. The roots of the tree send the sap through the trunk and the branches to the fruits. In a similar way, knowledge and its aggregates – competencies, capabilities, and intellectual capital – make up that flows from the roots to the new processes, and thus to the new products and services.

Figure 8. Innovation tree



Continuing with the tree metaphor, each company project unit can be assimilated to a specific tree and the whole company as many trees as it has project units. Each of these trees is fed with the knowledge of its roots. Furthermore the company has at its disposal a common intangible innovation infrastructure that is shared by all the project units. This infrastructure corresponds to the fertile soil in which all the company trees are planted. This fertile soil nourishes the roots (core knowledge) of each individual innovation company tree (see Figure 9).

Figure 9. Company innovation infrastructure

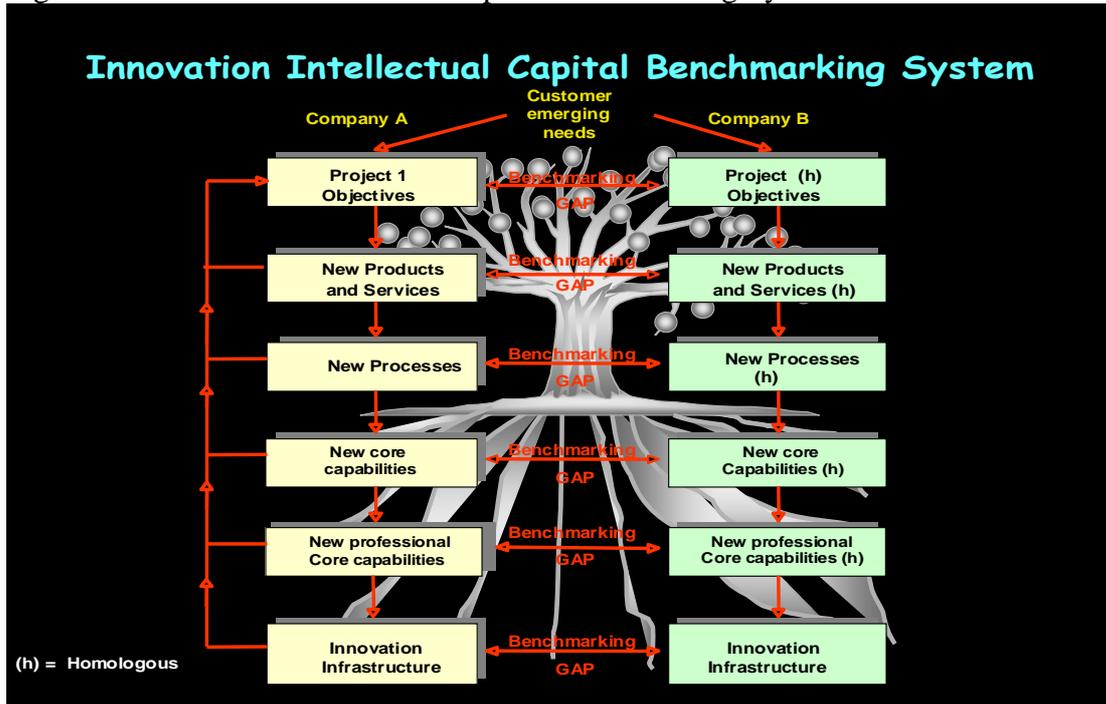


The assessment process is carried out in a two-fold fashion as depicted in the flowchart of Figure 10. On one side, we take as reference benchmarks the innovative project objectives and goals (Company A); on the other side, we take as a reference benchmark the equivalent innovative project of the best world competitor (Company B). The flowchart shows that, within each company innovation tree (project unit), an analysis can be made, successively, on the fruits (new products and services), the branches (new processes), and the roots (new core competencies and professional core competencies). In addition, the overall soil fertility (innovation infrastructure) can be analysed.

In analysing each particular tree (i.e. each individual project unit), we use the innovation value chain as an analysis tool. We argue that it is a useful approach because it helps to identify the interrelationships between innovative products and innovation capabilities. If products with a closer fit to firm competencies tend to be more successful, in turn, the effect that new product projects have on the firm's competencies is a crucial issue to be observed in the trajectory of firm's renewal and development.

All of the above mentioned analyses have the ultimate purpose of discovering, in each of the flowchart steps or phrases, the new core knowledge and new core technologies that are the prime reason for sustainable competitive advantages.

Figure 10. Innovation Intellectual Capital Benchmarking System



In the same way, the methodology makes it possible to compare each specific tree (project unit) with the homologous tree of the best of the competition, thus facilitating the benchmarking of fruits (new products and services), branches (new processes), roots (new core competencies and professional core competencies), and soil fertility (innovation structure).

Using the same tree metaphor as in the IICBS, we can establish characteristics of the OICBS framework similar to those we have established in discussing the IICBS framework. The frameworks and information systems are similar and we can move from IICBS to OICBS considering the equivalent concepts and terms as shown in Figure 11.

Figure 11. OICBS and IICBS equivalent concepts and terms.

OICBS	IICBS
Business unit	Project unit
Products and services	New products and services
Processes	New processes
Intangible resources	New intangible resources
Operations infrastructure	Innovation infrastructure
Core competencies	New core competencies
Professional core competencies	New professional core competencies
Customer needs	New customer needs
Operations value chain	Innovation value chain
Results	Future results
Operations figure	Innovation figures

Implications for Managers

Senior managers effectively integrate the ICBS into the overall business strategy in a similar way they integrate other strategy-focused models. Nevertheless, in the particular case of the ICBS two new functions have to be performed: business intelligence and competitive benchmarking.

The main benefits from using ICBS are the following:

- Learning from one's betters to surpass one's own competitive position.
- Identifying the specific competitiveness factors that are relevant in a given business activity.
- Through the ICBS factors framework, enabling the identification, auditing and benchmarking of the core competencies or core knowledge that are the main sources of long term sustainable competitive advantages.
- When using ICBS in an orderly systematic and repetitive way we obtain competencies statements that complete financial balance sheets and lead companies to leverage core knowledge.
- Selecting in a systematic and organised way the necessary information for evaluating relevant factors, core knowledge, core competencies and key intellectual capital.
- Identifying the key areas in which in-depth benchmarking can be carried out in the future.
- Promoting organizational learning through assessment teams, benchmarking teams, and strategic teams
- Introducing a common language for company managers when dealing with intellectual capital
- Facilitating the work of the benchmarking and competitive intelligence team.

Conclusion

In the knowledge economy, soundly formulated and effectively implemented strategies are still the main drivers of company success, and SWOT analysis still remains the most common approach for analysing business strategy. However, in the new context, classical SWOT analysis does not provide suitable guidance for building an effective strategic management information system. An extended SWOT analysis which takes into consideration the two main streams of modern strategic thought - the resource-based view and the activity-based view - is a more reliable foundation. ICBS draws inspiration from the extended SWOT analysis and builds a strategic management information system in which core knowledge is the key issue.

References

- Amit, R. and Schoemaker, P. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 4, 1, 33-46.
- Andriessen, D. (2001). *Weightless Wealth*. Paper for the 4th world Congress on the Management of Intellectual Capital. Mc Master University. January 17-19. Hamilton, Ontario, Canada, 1-10.

- Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17, 1, 99-120.
- Carlucci, D., Marr, B. and Schiuma, G. (2004). The knowledge value chain: How intellectual capital impacts on business performance. *International Journal of Technology Management*, 27, 6/7, 575-90.
- Coyne, K.P. (1986). Sustainable competitive advantage – what it is and what it isn't. *Business Horizons*, 29 (Jan-Feb), 54-61.
- Dattakumar, R. and Jagadeesh, R. (2003). A review of literature on benchmarking. *Benchmarking: An International Journal*. 10, 3, 176-209.
- Drew, S.W. (1997). From knowledge to action: The impact of benchmarking on organizational performance. *Long Range Planning*, 30, 3, 427-41.
- Eustace, C. (2003). A new perspective on the knowledge value chain. *Journal of Intellectual Capital*, 4, 4, 588-596.
- Fuld, L.M. (1995). *New competitor intelligence: New business directions*. USA: John Wiley & Sons, Inc.
- Gilad, B. and Gilad, T. (1988). *The business intelligence system: A new tool for competitive advantage*, New York, AMACOM.
- Gilad, B. and Herrings, J.P. (1996). *The art and science of business intelligence analysis*. London: Jai Press Inc.
- Grant, R.M. (1991). The resource-based theory of competitive advantage: Implications for strategy formulation. *California Management Review*, 33, Spring, 114-35.
- Grant, R.M. (1998). *Contemporary strategy analysis*. Oxford: Blackwell Publishers Ltd.
- Haanes, K. (2000). Linking Intangible Resources and Competition. *European Management Journal*, 18, 1, 52-62.
- Hamel, G. and Prahalad, C.K. (1994). *Competing for the future*. Boston, MA: Harvard Business School Press.
- Hofer, C.W. and Schendel, D. (1978). *Strategy formulation: Analytical concept*. Minnesota: West Publishing Company.
- Itami, H. (1987). *Mobilizing Invisible Assets*. Cambridge, MA: Harvard University Press.
- Johnson, G. and Scholes, K. (2002). *Exploring corporate strategy. Text and cases*. 6th Edition. Essex; England: Prentice Hall/ Financial Times.
- Kaplan, R.S. and Norton, D.P. (1996). Using the balanced scorecard as a strategic management system. *Harvard Business Review*, 74, 1, 75-85.

Lev, B. (2001). *Intangibles: Management, measurement, and reporting*. Brookings Institution Press.

Marr, B. (2005). *Perspectives on intellectual capital – multidisciplinary insights into management, measurement, and reporting*. Oxford: Butterworth-Heinemann.

McGahan, A.M. and Porter, M.E. (1997). How much does industry matter, really? *Strategic Management Journal*, 18, Special Issue, Summer, 15-30.

Mintzberg, H. (1999). Five Ps of strategy. In Mintzberg, H., Quinn, J.B. and Goshal, S. (Edts.) *Strategy Process –Revised European Edition*, Pearson Education Limited, 13-21.

Nahapiet, J. and Ghoshal, S. (1998). Social capital, intellectual capital and the organizational advantage. *Academy of Management Review*, 23, 2, 242-66.

Oxford Dictionary (2004). http://dictionary.oed.com/cgi/entry/00238990?query_type (Nov, 2006)

Porter, M.E. (1985). *Competitive Advantage*. New York: Free Press.

Porter, M.E. (1996). What is strategy? *Harvard Business Review*, 7, 6, 61-78.

Prahalad, C.K. and Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review*, May/June, 68, 79-91.

Quinn, J. B. (1992). *Intelligent Enterprise*. New York: The Free Press.

Quinn, J.B. (1999). Strategies for change. In Mintzberg, H., Quinn, J.B. and Goshal, S. (Edts.) *Strategy Process –Revised European Edition*, Pearson Education Limited, 5-13.

Reed, R. and DeFillippi, R.J. (1990). Causal ambiguity, barriers to imitation and sustainable competitive advantage. *Academy of Management Review*, 15, January, 88-102.

Roos, G. (2005). Intellectual capital and strategy: A primer for today's manager. *Handbook of Business Strategy*, 123-32.

Rumelt, R.P. (1999). Evaluating business strategy. In Mintzberg, H., Quinn, J.B. and Goshal, S. (Edts.) *Strategy Process –Revised European Edition*, Pearson Education Limited, 91-100.

Spendolini, M.J. (1992). *The benchmarking book*. AMACOM, a division of American Management Association. New York, 18-22.

Sullivan, H.P. (2000). *Value-Driven Intellectual Capital*. New York: John Wiley&Sons, Inc, 3-18.

Sveiby, K.E. (2001). A knowledge-based theory of the firm to guide strategy formulation. *Journal of Intellectual Capital*, 2, 4, 344-58.

Teece, D.J., Pisano, G. and Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18, 7, 509-33.

Tidd, J. (2005). *From knowledge management to strategic competence: Measuring technological, market and organizational innovation*. London: Imperial College Press.

Torvstiga, G. and Birchall, D.W. (2002). Strategic knowledge, sourcing, integration, and assimilation: A capabilities-portfolio perspective. In Bontis, N. (Ed.) *World congress on intellectual capital readings*, 104-18.

Viedma, J.M. (2002). Innovation capability – Benchmarking System (ICBS). In Bontis, N. (Ed.), *World Congress on Intellectual Capital Readings*. Boston, MA: Butterworth-Heinemann, 243-65.

Viedma, J.M. (2004). Strategic knowledge benchmarking system (SKBS): A knowledge-based strategic management information system for firms. *Journal of Knowledge Management*, 8, 6, 31-49.

Watson, G. (1993). *Strategic Benchmarking*. John Wiley & Sons.