
IICBS Innovation Intellectual Capital Benchmarking System

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Abstract.

Most industry analysts agree that innovation is the key to successful competition in the information society. At the same time, researchers in the areas of sustainable competitive advantage have come to the conclusion that the only things that give an organisation a sustainable edge are; what it knows, how it uses what it knows, and how fast it can learn new things. However, while there is general agreement on the key role of knowledge as a source of competitive advantage, few in industry know how to manage intellectual capital to produce value in an efficient way. This lack of expertise is especially relevant when dealing with the acquisition of new knowledge which is one of the key drivers of the innovation process.

IICBS (Innovation Intellectual Capital Benchmarking System) is both a new management method and a new management tool that allows companies to benchmark their core innovation capacities against the world-class competitors in their sector. It is a framework built around the key factors and criteria that determine competitiveness in innovation in the context of global markets. The factors considered are: emerging needs, project objectives, new products and services, new processes, new core capabilities, new professional core capabilities, company innovation, infrastructure financial results. IICBS identifies the specific innovation and competitiveness factors which are relevant in a given business sector.

IICBS identifies, audits and benchmarks the core capabilities or key intellectual capital that the company needs to develop to reach its future goals and successfully compete with “best in class” competitors. When using IICBS in a systematic way companies produce innovation competitiveness balance sheets that complement financial balance sheets and enable companies to leverage their innovation-related intellectual capital. The system has been successfully piloted in more than ten European small and medium size enterprises.

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Bibliography.

1. The Internationalization of the Economy and the Globalization of Markets

It is no secret that over the last few years an extraordinarily important socio-economic phenomenon has changed the world we live in. This phenomenon consists of an unstoppable globalization of the economy and markets. Advances in transportation, communications, electronics, data processing, telecommunications and new materials have converted the world into a global village whose inhabitants are getting to know each other much better, and in which consumption patterns and production methods and techniques are becoming increasingly uniform. The very same McDonald's, Burger King, Body Shop, Ermenegildo Zegna and multinationals such as IBM, Samsung, Sanyo, Seiko and Nestle are found in all the built-up areas of the industrialized and developed countries. As a result, similar appliances and utensils (washing machines, videos, refrigerators and PCs, for example) can be found in many homes, and the same occurs in offices and companies (fax, electronic mail, PCs and Windows 95). Multinational companies encourage this process and also promote strategic alliances, franchises and co-operative agreements.¹

The following is a list of factors that encourage the internationalization of markets and competition.

- ◆ Opening up of frontiers (USA, NAFTA, Mercosur, etc.)
 - The circulation of products: International products.
 - The increase in the number of new companies and the acquisition of companies.
 - Greater number of multinationals.
 - Increase in the number of business trips.
 - International services for companies: Banking, transportation, consulting, auditing, etc.
- ◆ Communications.
 - Worldwide telecommunications networks.
 - The circulation of images.
 - The rapid spreading of fashions: the 'snob' effect.

- Internationalization of tastes.
- Transnational segments of clients: Teenagers, yuppies and businessmen.
- World products.
- World brand names.
- Universal messages.
- Satellite communications.
- ◆ World products.
 - The cost of technology, the profitability of R+D and investments.
 - Manufacturing with a worldwide perspective.
 - International supplying and purchases from beyond national borders.
 - Internationalization of components and equipment.
 - Internationalization of suppliers and outsourcing.
- ◆ Worldwide distribution.
 - Rapid international transportation.
 - Data transmission networks.
 - Telecommunications equipment.
 - World standards.
 - Internationalization of services.
- ◆ Tourist Travel.
 - Client - traveller.
 - Discovery of products in other countries.
 - The need for products to be present in other countries.
 - Worldwide quality standards.
 - Internationalization of services for travelers.
 - Internationalization of hotels, banks, travel agencies, etc..

2. Company competitiveness in the new internationalized global environment.

All companies in the context we have described above are obliged to develop their activities in a highly competitive and increasingly international environment, regardless of their size and the country they are located in.

If they are to be successful in formulating strategies and taking decisions, all companies operating in this environment require systematic and up-to-date information on the following subjects:

- The competitive environment of their specific business activity.
- The competitive gap between them and the international market leaders.
- Knowledge of the causes of the competitive gap.

Figure 2.1 below illustrates the concepts discussed in Section 2.

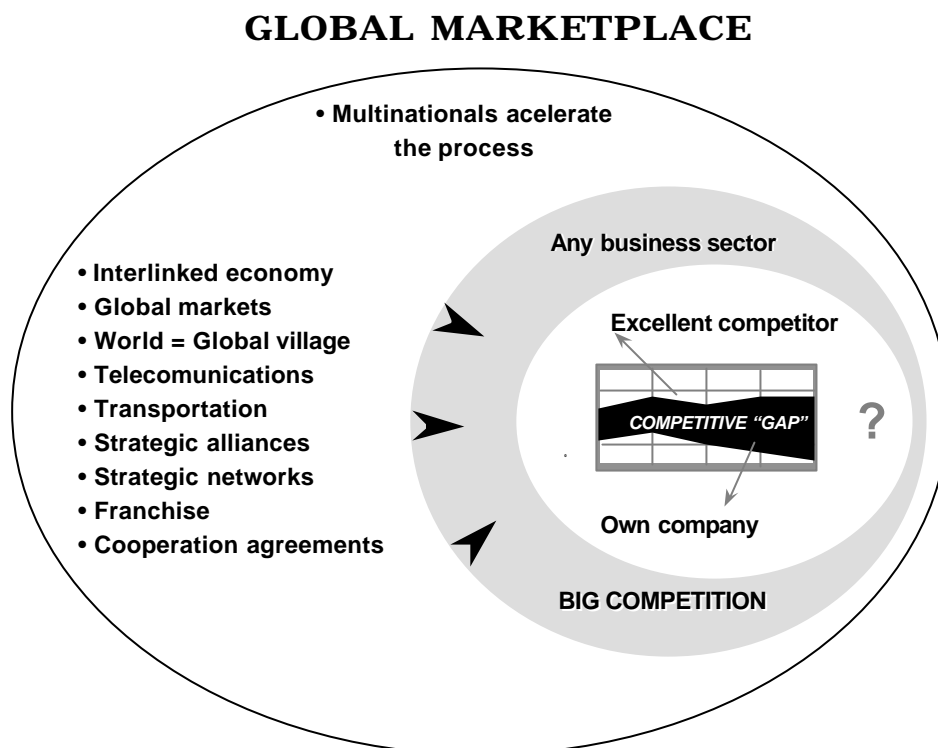


Figure 2.1: Global marketplace.

3. Filling and reversing the competitive gap.

In accordance with what has been said in paragraph 2, knowing the causes that produce the competitive gap between a company and the international market leaders in the same business activity is the key issue in order to increase company competitiveness.

3.1 Knowledge and Intellectual Capital as the only sources of sustainable competitive advantages.

Laurence Prusak in an article published in 1996² stated the following: “Researchers in the areas of sustainable competitive advantages have come to the conclusion that the only thing that gives an organisation a competitive edge, the only thing that is sustainable, is what it knows, how it uses what it knows, and how fast it can know something new”. So, in other words, he gives the answer to the fundamental question: Which are the causes of the competitive gap? The answer obviously is knowledge.

But what does Laurence Prusak mean by knowledge?. His clear definition is³: “Knowledge is a fluid mix framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices and norms”.

Nevertheless and before going ahead in this paragraph, we consider that it is important to establish a clear distinction between the concept of knowledge management and the concept of Intellectual Capital Management. In accordance with Kark M. Wiig⁴ “Intellectual Capital Management (ICM) focuses on building and governing intellectual assets from strategic and enterprise governance perspectives with some focus on tactics. Its function is to take overall care of the enterprise’s intellectual capital”. “Knowledge Management (KM) has tactical and operational perspectives, KM is more detailed and focuses on facilitating and managing knowledge related activities such as creation, capture, transformation and use. Its function is to plan, implement, operate and monitor all the knowledge-related activities and programs required for effective intellectual capital management”

So, summarizing we can say that Intellectual Capital refers to the intellectual assets from an strategic and global perspective and knowledge refers to the components of the intellectual assets from a tactical or operational perspective. In fact both concepts overlap, and they are in practice the same thing but taken from different perspectives. Concluding, the answer to the question that we put before on which are the causes of the competitive gap, these could be either knowledge or intellectual capital, but because the causes in that case are obviously global and strategic we think that Intellectual Capital is definitely the most appropriate answer.

3.2 The need to Benchmark. What to Benchmark?

Each specific business activity has the specific and relevant intellectual capital that explains the competitive gap. Once determined the specific intellectual capital we use it as a comparison basis in order to Benchmark the world best competitors in the same business activity. If we are for example in the fast food sandwiches industry and we consider Mc Donald’s as the international best in class company, the relevant core competencies or the relevant knowledge or the relevant intellectual capital of Mc Donald’s will be the model’s constituents to benchmark. In this particular case the answer to the question what to benchmark is the core competencies of Mc Donald’s.

Nevertheless in order to be more specific on the core competencies to benchmark we need to consider how value is created in the internal business process value chain. The business process value chain could be divided into two big groups: the innovation process and the operations process. The

innovation process is made up of product design and product development and the operations process is made up of manufacturing marketing and postsale service. Figure 3.1 illustrates the business process value chain.

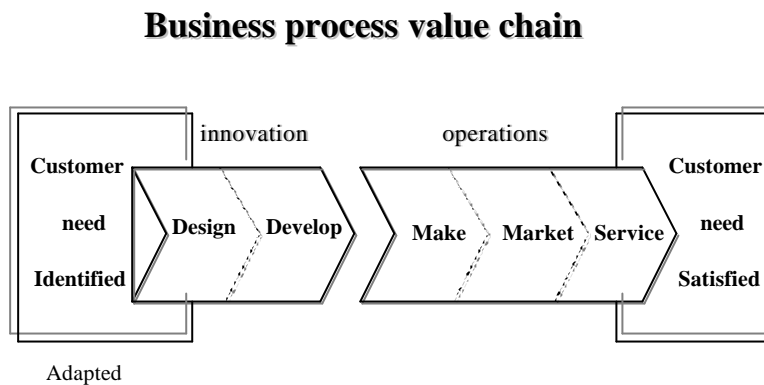


Figure 3.1 Adapted from Kaplan (1996)

Traditional perspective focused on the operations process. This short wave of 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 1996)⁵. In this case value is created through operations core competencies or operations intellectual capital.

But the innovation process, the long wave of value creation, is for many companies a more powerful driver of future financial performance than the short term operations process. If this is the case they may require 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 multiyear product-development process or to develop a capability to reach entirely new categories of customers may be more critical for future economic success than managing existing operations efficiently, consistently and responsively. In this specific case value will be created through innovation core capabilities or innovation intellectual capital.

The paper that I submitted to the 3^d world congress on Intellectual Capital and Innovation (Viedma 1999)⁶ was mainly focused on operations core competencies or operations intellectual capital.

This paper entitled IICBS Innovation Intellectual Capital Benchmarking System is mainly focused on the innovation core capabilities or the innovation intellectual capital.

So going back to the previous question what to benchmark, the answer in this particular case will be the innovation core capabilities or the innovation intellectual capital of Mc Donald's. These core capabilities are the ones that will guarantee long term excellence or long term success.

3.3 The IICBS (Innovation Intellectual Capital Benchmarking System) framework.

IICBS is a framework that focuses on the innovation process of the business process value chain. We have said in paragraph 3.2 that innovation process represents the long wave of value creation and it is the main powerful driver of future financial results. In that sense competing successfully in the long run means innovating and innovating entails building new competencies, new capabilities and new knowledge.

When companies compete for the future (Hamel 1994)⁷ they compete on building and deploying the right core competencies and capabilities[♦] in a consistent way. “Consistency depends first of all on a deep consensus about which competencies to build and support and second on the stability of the management teams charged with competence development. Such consistency is unlikely unless senior managers agree on what new competencies should be built. Without such a consensus, a company may well fragment its competence –building efforts, as various business units pursue their independent competence -building agenda, or the firm may simply fail to build new competencies” (Hamel 1994).

We conclude that companies do not compete on products and services. They really compete on the underlying capabilities that make the products and services possible. Accordingly competing for the future will be competing for the future capabilities (source of new processes, products and services) against the world class future capabilities of the best future competitors.

IICBS framework evaluates or assesses the innovation capabilities that make possible the realization of new projects that will lead to new products and services through the appropriate processes. IICBS also assesses the innovation infrastructure that supports all the new projects that the company has started or is going to start in the near future.

The assessment process is carried out on a double way. On one side we take as a reference benchmark the innovative project objectives and goals, on the other side we take as a reference benchmark the equivalent innovative project of the best world competitor.

[♦] We assume that core competencies and core capabilities are substantially the same thing. Stalk and others (1992)¹¹ underline the following differences: “But where as core competence emphasises technological and production expertise at specific points along the value chain, capabilities are more broadly based encompassing the entire value chain. In this respect competencies are visible to the customer in a way core capabilities rarely are”.

See figure 3.2 for a better comprehension of the above explanation.

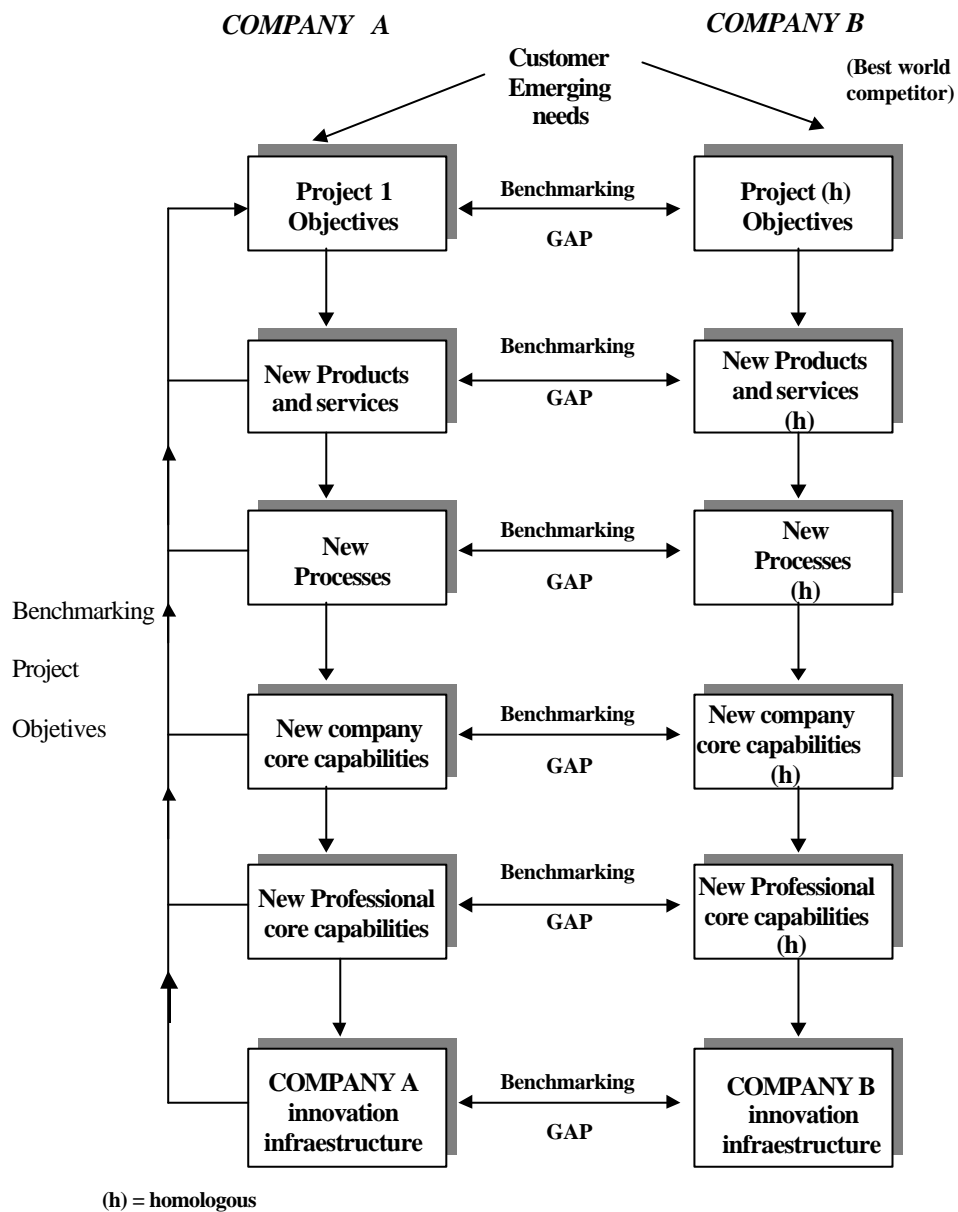


Figure 3.2. The IICBS framework

4. Building the IICBS framework.

4.1. The competitive or excellent company in the global market context.

The modern theory of management provides the paradigms for the competitive or excellent company in the context of the global markets.

The following are some, but by no means all, of the most meaningful paradigms:

- The Intelligent enterprise James Brian Quinn (1992)
- Innovation explosion James Brian Quinn (1997)
- Jordan J. Baruch
- Karen Anne Zien
- The Knowledge creating company. Ikujiro Nonaka and Hirotaka Takechi (1995)
- The living company Arie de Geus (1997)
- The Learning organization. Peter Senge (1990)
- The change masters Rosabeth Moss Kanter (1983)
- When giants learn to dance Rosabeth Moss Kanter (1989)
- World class Rosabeth Moss Kanter (1995)
- Innovation and entrepreneurship Peter Drucker (1985)
- Competing for the future Gary Hamel, K.C. Prahalad (1994)
- Mastering the dynamics of innovation James M. Utterback (1994)
- Intellectual Capital Leif Edvinson and Michael Malone(1997)
- The Balanced Scorecard Robert S. Kaplan and David P. Norton (1996)
- The new organisational wealth Karl Erik Sveiby (1997)
- The centerless corporation Bruce A.Posternack and Albert J.Viscio (1998)
- Built to last James C.Collins (1995)

The human and organizational characteristics that shape the above paradigms can be summarized as follows:

- Multidisciplinary teams that sometimes run themselves.
- Work in networks (internal and external) supported by PC networks.
- Reduction of hierarchical levels (delaying).
- Greater autonomy and decision-making powers (empowerment).
- New role of managers as coaches.
- Investment in training and learning.
- General use of data processing and telecommunications as instruments affecting strategies, quality and productivity.
- Concentration on core business and core capabilities.
- Outsourcing and new relationships with customers and suppliers.
- Managers become leaders (importance of vision).
- New non-financial indicators for evaluation.
- New skills and new personal development methods.
- New forms of remuneration and incentives.

- Creativity, knowledge creation and innovation key issues.

The above mentioned paradigms and the human and organizational characteristics which shape them constitute the foundations which all companies inevitably have to rely upon if they want to achieve high standards in the extraordinarily competitive context of today's global markets.

But above the mentioned before paradigms, there is the strategic management paradigm entitled: "The resource based view". The resource based view fulfills the promise of the famous Kenneth R. Andrews strategy framework that defined strategy as the match between what a company can do (organisational strengths and weaknesses) within the universe of what it might do (environmental opportunities and threats). The resource base view approach acknowledges the importance of company specific resources (tangible and intangible) and competencies, yet it does so in the context of the competitive environment.⁸ It sees capabilities and resources as the heart of a company's competitive position, subject to the interplay of the three fundamental market forces: demand (does it meet customers needs, and is it competitively superior?), scarcity (is it imitable or substitutable, and is it durable?) and appropriability (who owns the profits?).

Put another way, these paradigms and the concepts, principles, theories and techniques they contain constitute the current sources of inspiration for achieving entrepreneurial success.

We have included in the brief bibliography some of the most meaningful books written on the formulation of today's theory of entrepreneurial excellence.

We think it useful to complement the above explanations stressing the fact that nowadays the management theorists are wrestling with the problem of how organisations can continually adapt, change innovate, create and network in order to survive and succeed in market environments that are quickly becoming more unpredictable, with technologies that are becoming more pervasive and integrative with organisations that have become pliable and porous and with people who are questioning, assertive and independent. In other words to be viable in the changing and demanding business environment of today's organisations must be able to improve themselves continually as part of their normal functioning; to be intelligent, critical and open; and to be creative and capable of eternally transforming themselves while sustaining a sense of purpose and direction (Clarke 1998)⁹.

Finally and in order to conclude this paragraph we would like to point out the fact that creativity, knowledge creation and innovation are the key issues. In this way Zangwill (1993)¹⁰ asserts: "For more than twenty years, my work has probed the characteristics that distinguish the top companies from the mediocre. Above all, one characteristic stands out: No firm stays on the top long unless it is

highly innovate. Especially with technologically related companies, whatever their country, the companies that stay in the lead continually innovate new products that customers want”.

4.2. The IICBS general framework.

The paradigms of the competitive or excellent company in the context of the global markets and specially the innovative company paradigm provide us with bases for constructing the IICBS general framework.

The framework is articulated around the following eight factors: (see figure 4.1, 4.2 and 4.3)

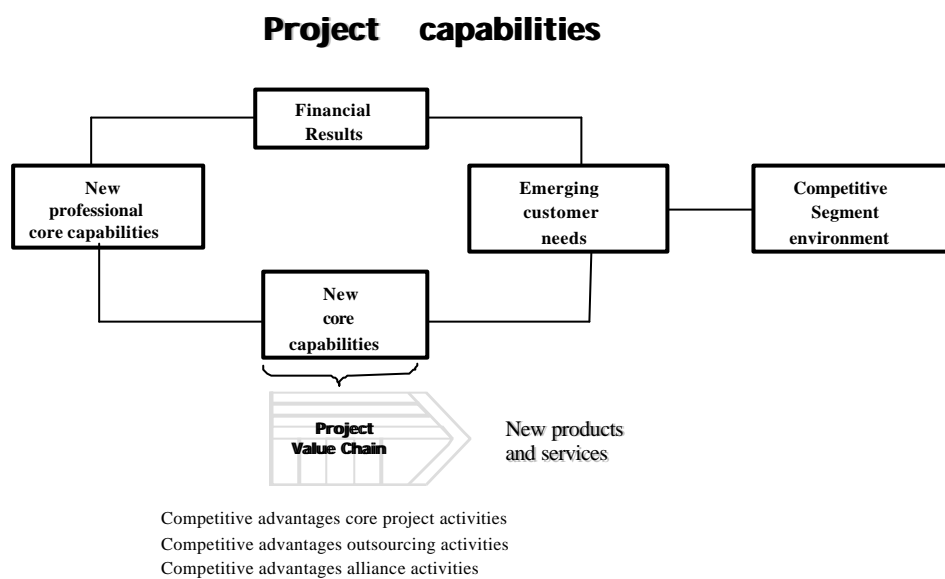


Figure 4.1 Project capabilities

Common R+D infrastructure

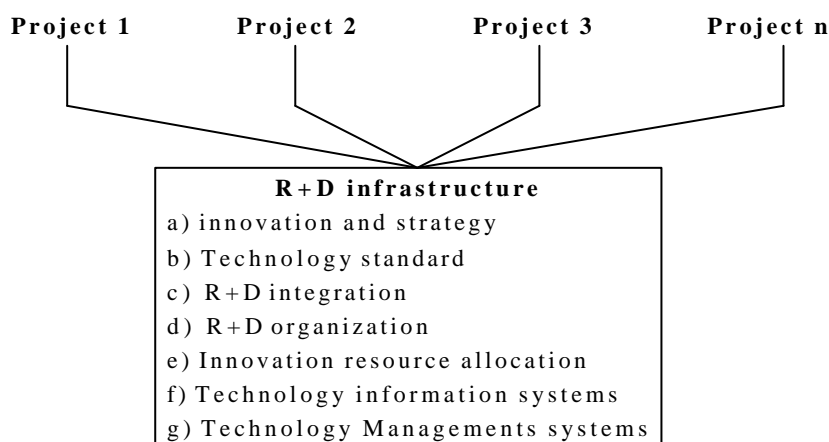


Figure 4.2 Common R+D infrastructure

1. Emerging needs. Potential or emerging customer segment needs that the company expects to cover through the project.
2. Project objectives. The project is the innovation business unit that leads to new products and services through new processes using company and professional core capabilities and company innovation infrastructure. The ultimate objectives of the projects are the expected financial results.
3. New products and services. New products and services with their attributes and characteristics and functions.
4. New processes. Primary and support value chain activities that produce the project's new products and services. These activities are made up of core project activities, outsourcing activities and strategic alliances and cooperation agreement activities. Competitive advantages will be generated mainly in the different value chain core project activities.
5. New company core capabilities. Essential knowledge or core capabilities that will make it possible and will give way to competitive advantages, new processes and new products and services within the project.
6. New professional core capabilities. Professionals, managers and support staff capabilities that will generate and perfect core capabilities and core competencies.
7. Company innovation infrastructure. Research and development infrastructure (tangible and intangible assets) that the company has and that is for the use of the different projects.
The company innovation infrastructure covers the following issues:
 - a) Is technology innovation part of the business strategy?
 - b) What is the company's knowledge and technology standard?
 - c) Is the R+D department working together with the other main departments?
 - d) How well organised is the R+D department?
 - e) How many resources are allocated to the innovation function?
 - f) Are there any technologies informations systems? How are they performing?
 - g) How are they performing the technology management systems?
8. Financial results. Expected economic and financial results from the project.

The eight factors framework

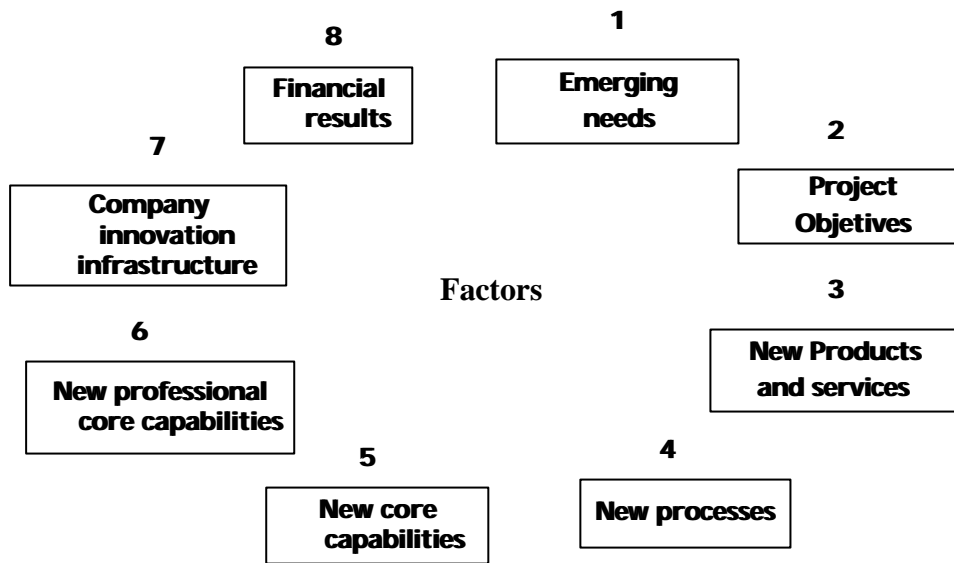
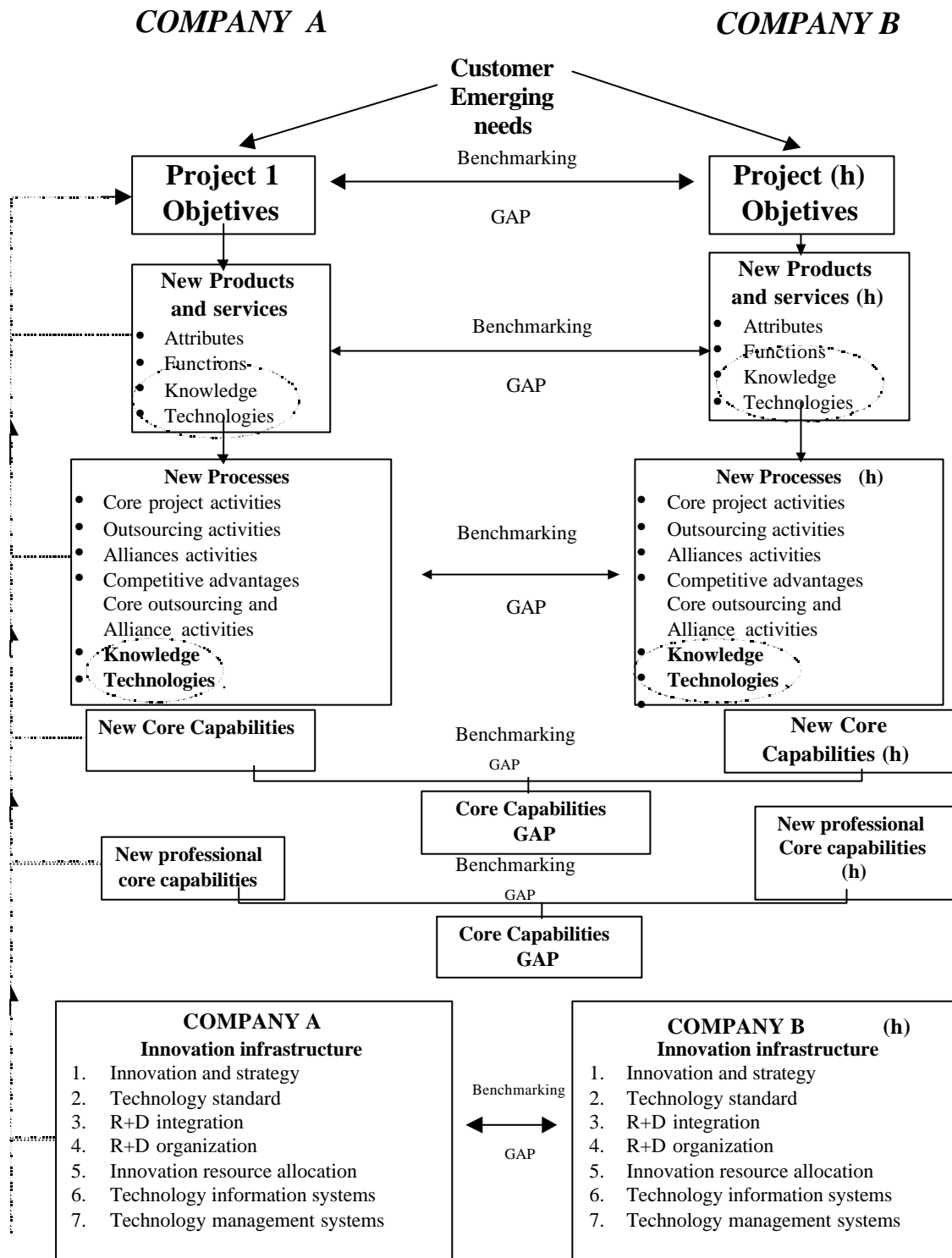


Figure 4.3 The eight factors framework

Figure 4.4 complements and complete figure 3.2 and gives a full overview of the main elements that make up the IICBS framework.



H = homologous

Figure 4.4 General IICBS framework

In paragraph 3.1 we mentioned that Lawrence Prusak stated the following: “Researches in the areas of sustainable competitive advantages have come to the conclusion that the only thing that gives an organisation a competitive edge, the only thing that is sustainable, is what it knows, how it uses what it knows, how fast it can know something new”. We are now in the case of new essential knowledge, new core competencies, new core capabilities or new intellectual capital.

The eight factor framework that we have already described is in fact a flexible framework that allows the core capabilities or intellectual capital identification and evaluation within each particular factor. By the same token the different components of intellectual capital (human capital, structural capital and relational capital) can be assessed and appraised.

The eight factor framework explains how sustainable competitive advantages are achieved in the new products and new services that come out of the processes and operations. Briefly, they can be achieved in the following way:

Companies if they want to successfully compete in the future they need to innovate in a systematic way. The way to innovate is through projects that have the clear objective of satisfying customer emerging needs. Customer needs satisfaction is accomplished through the project’s new products and services. Nevertheless competitive products and services are not easily achieved; a lot of work is needed in order to gradually establish competitive advantages in the different core activities of the value chain process. Core competencies and core capabilities in the core project activities of the value chain produce new products and services with competitive advantages and high knowledge or intellectual content. In addition the company innovation infrastructure or in other words the company R+D department gives the necessary support to the whole process.

Finally the acquisitions of core capabilities and the accomplishment of all those competitive advantages is only possible by means of the actions of the different project leaders that decide on and carry out objectives and strategies, and who shape business culture with their ways and methods.

4.3. From the general to the specific IICBS framework.

The IICBS general framework that we have already described in paragraph 4.2 is a general framework that can be used to generate the specific IICBS framework suitable to a specific business context.

The IICBS general framework consist of 8 factors and each factor is composed of XX several criteria and each criteria is composed at the same time of XX several questionnaires.

We customize the IICBS general framework to a specific business context through the criteria and questionnaires or choosing among the criteria and questionnaires the ones that best suit the specifications of a given business design.

When filling the questionnaires the different benchmarking teams (learning teams at the same time) are able to define and evaluate the innovation core capabilities and within the core capabilities the three main types of intellectual capital that are: human capital, structural capital and relational capital.

Given that a large part of the information (above all, on the best class competitor project) may not be known precisely, all the questions in all the IICBS questionnaires have a “response precision” box.

By integrating the results of the response precision boxes, the IICBS method also permits us, to evaluate the degree of reliability of the benchmarking and its constituent part, to establish plans for systematically improving information acquisition and to set up a competitive intelligence team in the company.

The following figure 4.5 draws the process above described.

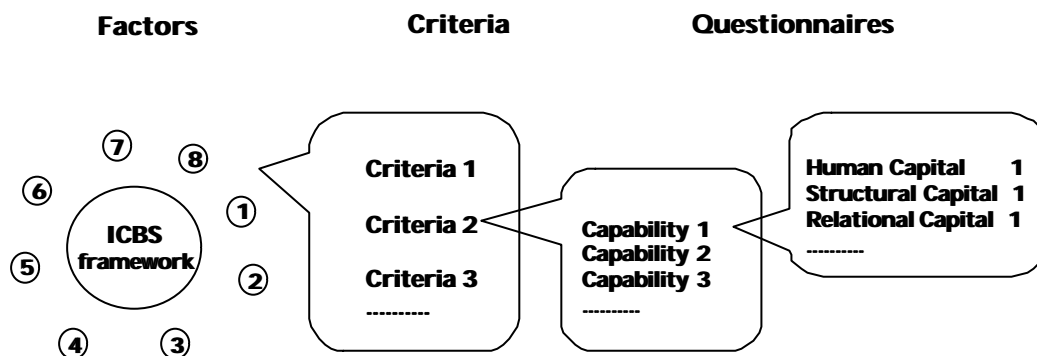


Figure 4.5 Specific IICBS framework

4.4 The key roll of strategic benchmarking in the framework construction.

As has been said before IICBS is both a new management method and a new management tool that allows companies to benchmark their core innovation capabilities against the world-class competitors in their sector. Nevertheless IICBS not only benchmarks core capabilities but also processes (value chain sources of competitive advantage) and the products and services that the execution of the project turns out. Finally it also benchmarks innovation infrastructure.

The 8 factors framework is used for moving from the general framework (general context) to the specific framework (specific business context).

We customize the general framework through two types of variables: the criteria and the questionnaires and through a benchmarking process that covers the activities of two value chains, the one that belongs to our company and the one that belongs to the best competitor.

The process of competitive benchmarking allows us to determine the specific competitiveness factors and criteria which are relevant in a firm business activity. These factors and criteria may also be termed key competitiveness drivers.

The questionnaires that are directly derived from the criteria allow us to evaluate and benchmark core capabilities in the specific business context. Core capabilities are at the same time made up of the three main classes of intellectual capital, that is to say human capital, structural capital and relational capital. From better comprehension of the above see figure 4.6

From general framework to specific framework

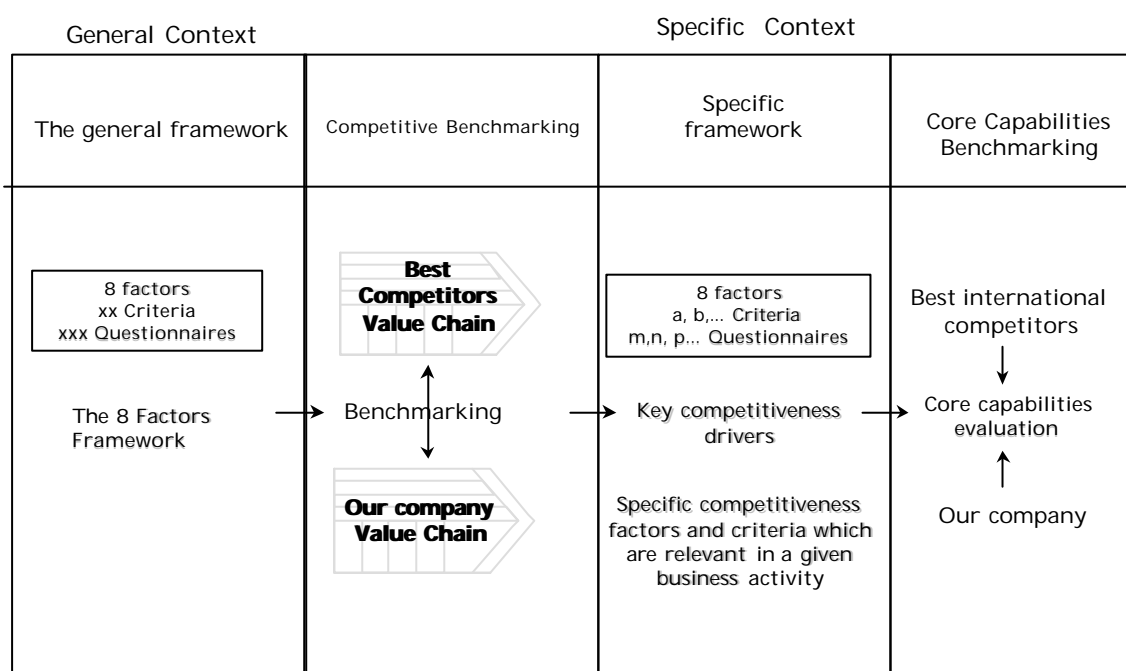


Figure 4.6: From general framework to specific framework.

5. IICBS Implementation process.

The following elements are involved in putting the IICBS method into practice:

- A general data base that contains all the possible criteria and questionnaires to be used. This means that each factor can be looked at in the greatest possible detail.
- A user-system interface that enables criteria and questionnaires to be adapted to the particularities of each company business segment and business project.
- The successive responses to the personalized questionnaires are used to create the specific database for a given company and a given business project.
- Specific software incorporating the factors, criteria, questionnaires and underlying theory and principles of excellence model enables us to process the information contained in the specific database and to obtain a series of outputs in the form of competitiveness figures, results and balances.

6. IICBS Innovation Intellectual Capital balance-sheets.

The processing of questionnaires corresponding to each of the company competitiveness factors provides us with the innovation capabilities results and balance sheets. These results and balance sheets can be obtained for the project as a whole or for each competitiveness factor.

Some examples of balances and results are given below: (Figures 6.1, 6.2, and 6.3).

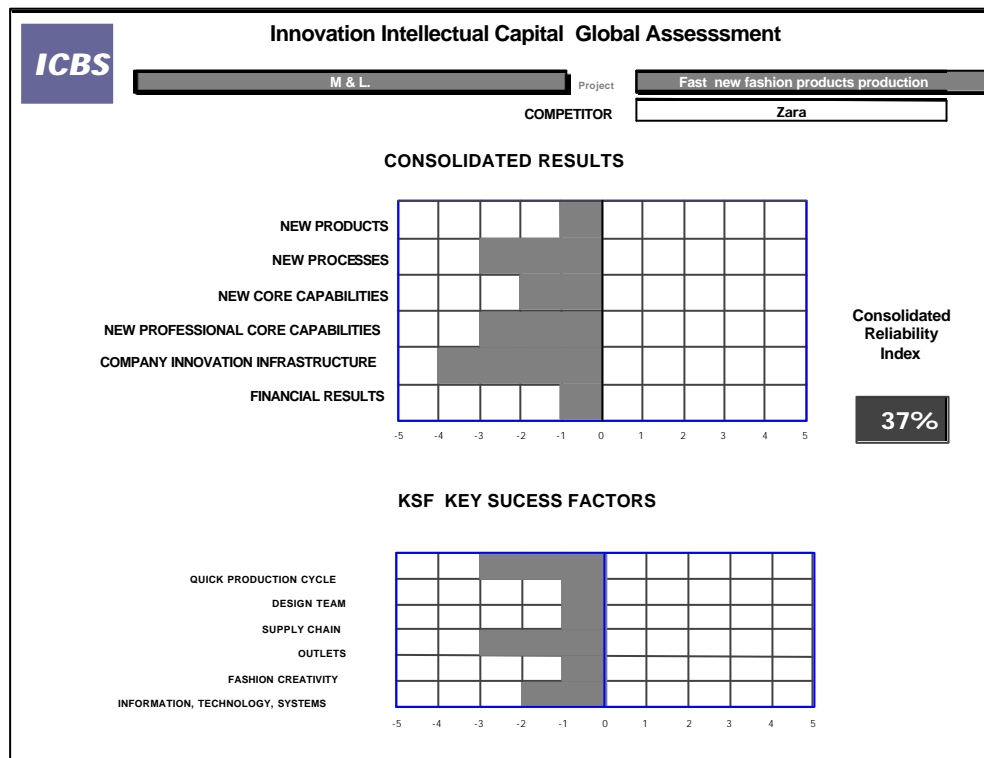
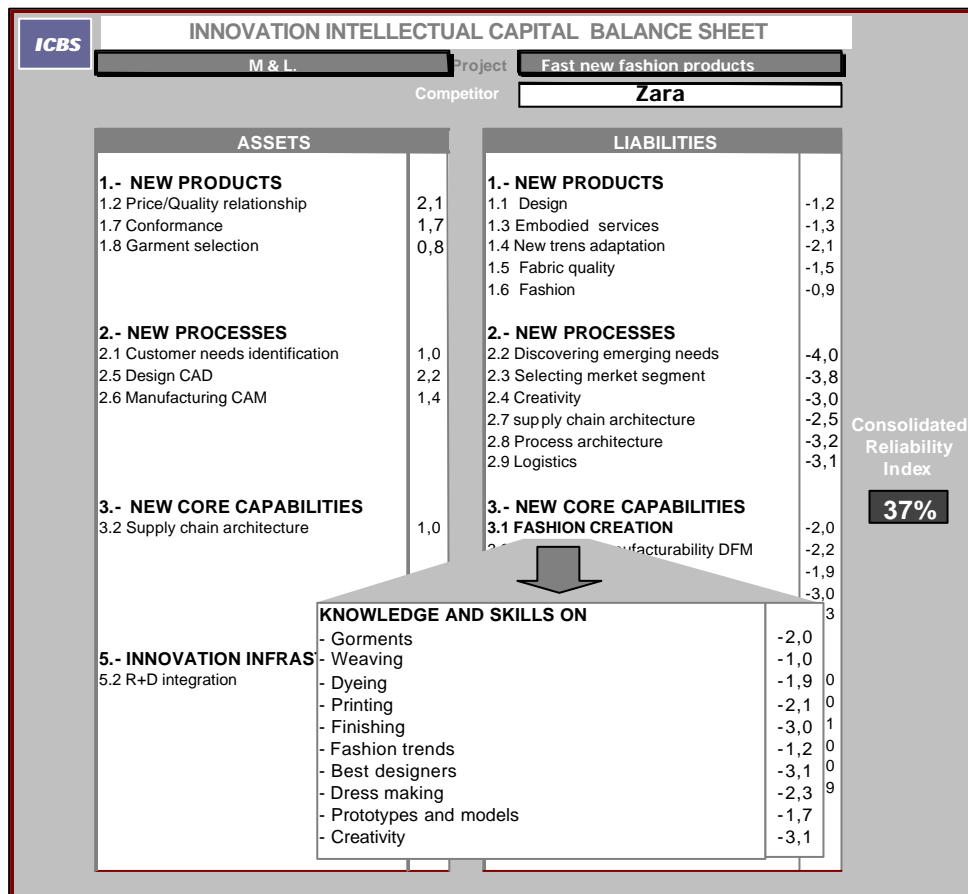
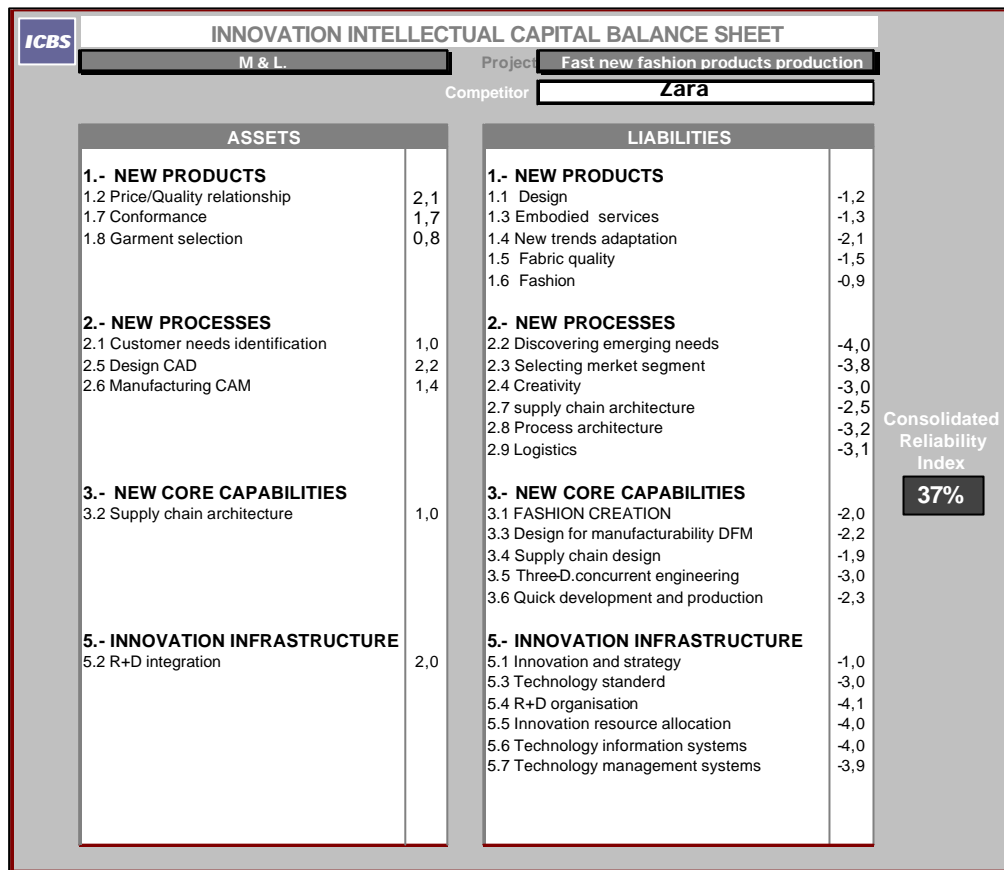


Figure 6.1: Innovation Intellectual Capital Global Assessment.

Figures 6.2 and 6.3: Innovation Intellectual Capital Balance-Sheets



7. Benefits from using IICBS

1. Learning from the best competitors that surpass one's own competitive innovation capabilities
2. Identifying the specific innovation capabilities factors and criteria which are relevant in a given business activity.
3. Through the IICBS factors framework, enabling the identification, audit and benchmark of the innovation core capabilities or innovation intellectual capital that are the main sources of long term sustainable competitive advantages.
4. When using IICBS in an orderly systematic and repetitive way we obtain innovation capabilities balance sheets, that are future oriented and complement and perfect finance balance sheets leading companies to leveraging innovation intellectual capital.
5. Selecting in a systematical and organised way the necessary information for evaluating relevant factors, core innovation capabilities and innovation intellectual capital.
6. Identifying the key areas in which in-depth benchmarking can be carried out in the future.
7. Promoting organisation learning through benchmarking teams, assessment teams, project teams and strategic teams.
8. Introducing a common language for company managers when dealing with intangible and intellectual assets.
9. Measuring the reliability concerning the relevant information and the progress of acquiring this information.
10. Facilitating the work of the benchmarking and competitive intelligence teams.
11. Facilitating the work of the knowledge and intellectual capital managers.
12. Giving to the SME's managers access to innovation capabilities and innovation intellectual capital management in a systematic and organised way.

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