

# How to Innovate Management Through Intellectual Capital Statements - Lessons Learned From the First Implementations in Brazil

Camilo Augusto Sequeira<sup>2</sup>, Markus Will<sup>1</sup>, Eloi Fernández y Fernandez<sup>2</sup> and Kai Mertins<sup>1</sup>

<sup>1</sup>Division Corporate Management, Fraunhofer IPK, Berlin, Germany

<sup>2</sup>Institute of Energy, Pontifical Catholic University, Rio de Janeiro, Brazil

[camilo@esp.puc-rio.br](mailto:camilo@esp.puc-rio.br)

[markus.will@ipk.fraunhofer.de](mailto:markus.will@ipk.fraunhofer.de)

[Eloi@puc-rio.br](mailto:Eloi@puc-rio.br)

[Kai.Mertins@ipk.fraunhofer.de](mailto:Kai.Mertins@ipk.fraunhofer.de)

**Abstract:** Recent initiatives have shown that it is time to think about new ways of managing companies, particularly in emerging economies. Mertins *et al* (2012), points out that, "In the rapidly emerging Brazilian economy, intangible assets become a key success factor for sustainable growth". As experiences in the fast moving city and state of Rio de Janeiro have shown, the development of systematic management procedures for these intangible assets is especially valuable for fast growing small and medium-sized enterprises (SMEs) in order to serve as a solid backbone for an increasingly knowledge-based economy. Another initiative described by Sequeira *et al* (2012) highlights that Brazil has been evolving into a knowledge society dealing with political changes, globalization, new technologies, and new global competitors, such as China. The need to enhance companies' and, by extension, countries' competitiveness has grown rapidly. It is, therefore, evident that organisations and particularly government policies need to redress some critical competitiveness issues, most notably the establishment of the Competitive Intelligence System as a strategic tool. Without such tool, organisations and the country will find it difficult to position themselves within the global marketplace. Taking into account the main conclusions of the two initiatives described above, and the unique circumstances of organically grown organizations in the Brazilian business environment, this paper discusses the challenge of integrating the Intellectual Capital Statement - ICS into a comprehensive strategic change process. In order to promote sustainable business development in an emerging economy, the ICS has to be used to establish a continuous improvement cycle in the individual company, focusing on practical actions for maintaining and developing its intangible assets to ensure future competition capability.

**Keywords:** innovating management, competitive intelligence, intellectual capital, intangible assets, knowledge economy, Brazil, oil and gas, SMEs

---

## 1. Oil and gas context

"Tangible assets, financial and physical, are necessary but not long enough to create competitive advantage in a global world". These are the words of a senior executive involved in the operation of the oil and gas sector. According to him, the creation of value through intangible assets gained strategic importance in Brazil.

The newly discovered enormous reserves of oil and gas, off the coast of Rio de Janeiro state, calls the attention of leading global operators in the industry. Besides Petrobras, the largest state-owned company, multinational corporations of this sector are operating in Brazil. This causes thousands of companies, potential suppliers of goods and services with high technological and original content to focus on Rio de Janeiro and neighboring states, such as São Paulo and Espírito Santo.

The suppliers of the oil and gas production chain, especially small and medium enterprises, have strategic importance within Brazil's economic context for its likely and necessary endogenous development of technology and innovation. If Brazil wants to play a relevant role in the world scenario, the economic agents must be capable of providing products and services on a high technological development and innovation level on a medium and long term basis.

Thus, the oil and gas sector stands out as being a driver for this intensive technological development and innovation. In this context, the knowledge assets or intellectual capital may play a key role in the process of differentiation and competitiveness. As empirical studies confirm, productivity is a direct consequence of the level of technological development and innovation activities. Therefore, the amount of investments in

technological innovations results in an increased value creation in companies and, consequently, in the whole country. Evaluating the content of intellectual capital is crucial for direct and well-aimed investments in potentially productive sectors. As a consequence, we believe that, once identified and mapped, the content of intellectual capital can be an indicator of yield potential.

We believe the content of intellectual capital is directly related to the intangible factors of success as, for example, employee motivation, internal communication, knowledge transfer and cooperation, capacity management and leadership, as well as relationships with suppliers, customers and other stakeholders, including the impacts of corporate activities in the social and environmental field. All these factors, classified into three categories, make up the intellectual capital of a company: human capital, structural capital and relational capital.

This management challenge has been the starting point for the first pilot-project on implementing the management tool “Intellectual Capital Statement” (ICS) in ten pioneer SMEs from Rio de Janeiro. Supported by the Brazilian SME association SEBRAE, Catholic University of Rio (PUC-Rio) and Berlin-based Fraunhofer IPK launched a pilot project to introduce ICS to the Brazilian market and to meet the requirements of the management challenge described above. Taking into account the experiences from the German pilot-project “Wissensbilanz – Made in Germany” as well as the European pilot-project “InCaS”, a special implementation procedure for micro and small companies has been designed and tested - the so-called ICS Factory. The “ICS Factory” aims at ensuring fast practical results in the companies as well as supporting rapid prototyping and an action research approach to be used for the development of an adapted Brazilian version of the ICS.

The paper describes the special implementation of the European ICS method, adapted for small high tech companies. After giving a short overview of the objectives of the first ICS implementation in Brazil, the paper explains the methodology theoretical background. Further, it explains the special procedure designed for this purpose. As part of this procedure the crucial role of the moderator as pivotal figure to monitor and lead the implementation is emphasized.

Moreover, the paper provides an insight of the main results, as well as feedback of the companies expressed by a survey and video documentary testimony. The lessons learned as well as an outlook and future developments will be discussed in the last chapter.

## 2. Objectives

The challenge during the preparatory phase of the project has been to introduce the method to managers, as they have traditionally been loath to deal and treat intangible resources, such as knowledge, or considered them in a subjective manner without applying methods capable of identifying the intellectual capital factors and aligning them with company’s goals systematically.

Unlike conventional methods, “Intellectual Capital statement” (ICS) used in this pilot application allows, through a structured and straightforward procedure, to represent and manage the intellectual capital of the enterprise in a highly efficient way. Also, the community of external stakeholders benefit from the application, including funding institutions, providing more transparency for their investments. Therefore, both companies and interested parties may have a better understanding and thus, may start their investments in knowledge assets, minimizing risks on expectations of returns.

Therefore, the overall objective of the first project phase “ICS-Prototype Rio” was to implement Intellectual Capital Statements (ICS) based on the European InCaS methodology in ten micro and small enterprises in Rio de Janeiro in order to gain experience with this new management method and to derive requirements for developing and rolling out a Brazilian ICS methodology in subsequent projects.

For those purposes the following tasks have been completed:

- Training a team of ICS moderators for the application of the InCaS methodology in Rio de Janeiro in a two day workshop with participants selected among senior consultants with experience in strategic management.
- Implementing prototypical ICS in ten Rio-based companies in a rapid prototyping approach (“ICS Factory”).

- Evaluating the experiences of the prototypical ICS implementation for setting up requirements for a Brazilian ICS methodology.

The selected companies, from the oil & gas sector, participated in the first pilot project of this kind in Brazil. The main objectives to be achieved by this pilot application were:

- Show the benefits of the implementation of an ICS to Brazilian companies by providing them actual case studies.
- Extract lessons learned on the implementation of the European method, and define the requirements for suitability of the method ICS-BR (Intellectual Capital Statement Brazil) to the Brazilian reality.
- Train and certify the first group of moderators, coaches and future auditors qualified to apply the method according to its quality standards.
- Test instructional material (including checklists, templates etc.) available in English for ICS coaches and moderators to implement the method and track results to produce the Portuguese version.
- Understand the features of the Toolbox and spreadsheets to support the implementation of the method.
- Prepare the team and tools to support the future implementation on a large scale.
- If the application is viable on a large scale, to verify the requirements and the possibility of developing a database for future benchmarking on the content of intellectual capital.

### 3. Overview of the method

It is common ground that Intellectual Capital has become the critical success factor for enterprises operating in an emerging economy. Especially for SMEs, it is crucial to utilize and manage their intangible resources efficiently in order to obtain their competitive advantage (Mertins, Alwert, Will 2006). Therefore, the Fraunhofer-Institute for Production Systems and Design Technology (IPK) has developed a special method during the German pilot-project “Wissensbilanz – Made in Germany” and the European pilot-project “InCaS”. In order to bridge the gap between the requirements for internal management purposes and external reporting, a team of experts developed instruments to systematically assess, develop and report an organisation’s IC.

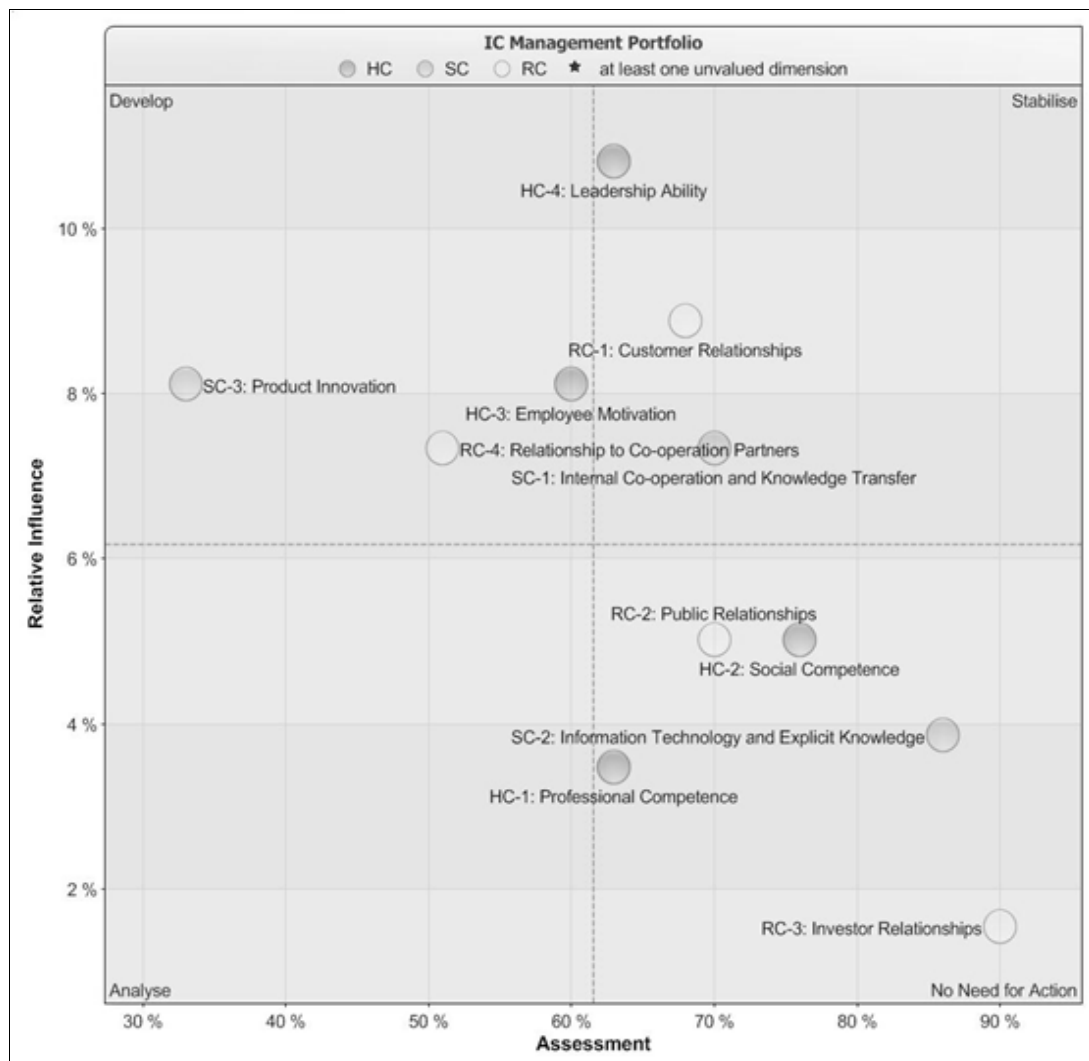
The method is supported by the software “ICS Toolbox” that provides further support for the ICS Moderator capturing the relevant data and producing analysis results in diagrams. The procedural model (see Figure 1) defines and describes eight steps as well as methodologies applied while going through the process of ICS implementation in detail (Mertins; Will; Meyer 2009). It starts with the formulation of the company’s business model, aiming at aligning intangible resources with significant value-generating processes and, crucially, with the objectives and desired business success of the company. This information is the basis for the other steps that complete the procedure for applying the method, ending with the establishment of the actions and indicators, summarized in an ICS report and a management presentation, to be used as management tools for monitoring change and reporting results.



Figure 1: The procedural model

The summarizing visualization, derived from the Toolbox, is a portfolio of Intellectual Capital Factors which displays the factors having the greatest impact on company results compared to their current assessment in a four quadrant matrix. The IC Management Portfolio displays the IC factors identified and assessed in step 2 into a four-quadrant matrix according to their relative importance in achieving the company’s strategic objectives (impact analysis) and the assessment of their current status (QQS-Assessment). **Error! Reference source not found.** gives an example.

The portfolio represents, on a consolidated basis, the results of the evaluation of each factor of intellectual capital. The Y axis displays the relative weight or impact of the factors on the results of the organization. The impact matrix, as a tool for analyzing each factor compared to its significance in relation to the organization’s results, generates this weighting measure called “relative influence”.



**Figure 2:** Example of an IC management portfolio

The X axis represents the consolidation of the assessment of intellectual capital factors in three dimensions: Quantity, Quality and Systematic (QQS-Assessment) the extent to which the company treats each of the factors. Thus, through easy and realistic illustrations, managers can manage their intangible assets and objectively assess the results over time, as shown in Figure 02.

In general, IC factors in the upper left typically represent future fields for intervention. If a factor appears in this section, the status quo is rather poor according to the QQS-Assessment while their relative importance is rather high. Therefore, it is crucial to develop these IC factors, as they have the highest potential of intervention. By systematically searching for the factors with the highest potential for intervention, the essential question for the top management can be answered: "Where should we start to invest? Where can we get the maximum impact at minimum costs?"

An ICS outcome is a defined set of actions aiming at the systematic development of particular IC factors as well as a set of indicators that helps monitoring these factors. This set of measures can be viewed as a first rough IC strategy which can be elaborated over time. Based on those findings, management might expand their business strategy taking into account IC related objectives and the opportunities deriving from systematic IC development.

The Impact Map represents the factors with their mutual influences and their delays. In order to develop a comprehensive understanding about the investment results in one of the factors of intellectual capital, for instance, product innovation, it is necessary to understand how long this factor takes to affect the financial results. This is a powerful tool to formulate strategies in the medium and long term. Managers assess future

scenarios and prioritize their investments and actions to achieve clearly connected goals in each of the prioritized IC factors as shown in Figure 03.

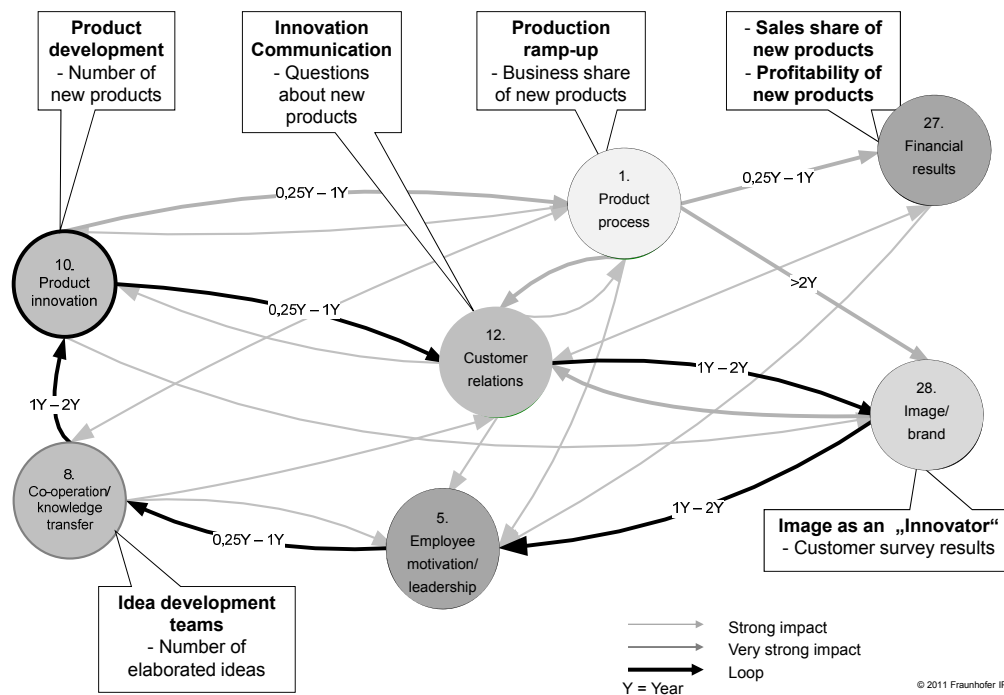


Figure 3: Example of an impact map with an IC loop and measurable actions

The ICS method can be considered an indicator to reveal critical factors and hence decide about the failure or the success of the company in an early stage of its life cycle. Companies often fail to focus on aspects of general business management to the point of diminishing growth and trigger financial strangulation. This explains, for example, the high mortality rate of start-ups. ICS helps companies to become aware of their lack of the necessary management skills or structure which allow organic growth. The companies also reported that the method’s biggest gains derive from the ICS evidence of possible failure mechanisms of coordination within the enterprise and internal communication, as well as some rigidity factors or counterproductive effects of corporate culture. The companies witnessed this evidence by themselves.

In general, according to the results of the pilot project, the intellectual capital factor that needs to be developed the most is the human capital factor “Management Competence”. In most companies, it appeared as the factor with the greatest relative impact on business results, but with low assessment. This means that by investing in the development of this factor with the highest intervention potential, the results arising from this investment are high.

#### 4. ICS pilot-implementation in 10 Brazilian SME

##### 4.1 Procedure of ICS factory

As part of the pilot-project, the method has been implemented in ten Brazilian SMEs in the so-called ICS Factory. Taking into account the characteristics of the Brazilian SME participants, we assumed that the target companies do not exceed the value of annual revenues of three million six hundred thousand Brazilian reais. Hence, the companies are relying on their own resources in order to adhere to the ICS application.

During the first part of the pilot-project, a group of ICS moderators was trained according to the European training program conducted by Fraunhofer Academy. The trained ICS moderator is responsible for leading the ICS implementation process in the company and for ensuring the results, summarized in the final ICS report. Subsequently, the trained ICS moderators ran the prototypical implementations in the “ICS Factory” in 10 Brazilian pilot SMEs.

During the “ICS Factory” each company was mediated individually by the previously trained ICS moderators and monitored by senior ICS coaches with in-depth experience in implementing the method. The Moderator accompanied the implementation process by managing the group and the process and by leading the workshops discussions towards an Intellectual Capital Statement. Each implementing company was represented by two or three senior professionals. The ICS Factory was divided in several short plenary sessions for explaining each methodological step and discussing preliminary results among the 10 companies, and several break-out sessions for each company to run the analysis supported by their personal ICS Moderator. The IC factors considered as standard in previous applications, especially in European organizations, were adjusted for the two-day workshop in order to facilitate the initial analysis of the Intellectual Capital and to guarantee fast results. To meet the requirements set for the pilot-project, the companies prepared their business model description beforehand. Hence, the participating companies were able to focus on the examination of their Intellectual Capital, especially in regard to the assessment (QQS analysis), in order to identify strengths and weaknesses of their IC factors.

## 4.2 Results for companies

The ICS Factory proved to be effective and efficient to introduce companies to the ICS method. Further, it gave an overview of the intangible resources with the highest potential to deliver value. Likewise, it worked very well as a first consistency check of their business model, also stressing the importance of the systematic management, introducing the company into a new language and perspective, and making rapidly apparent the gains from ideas exchange within the project team.

However, for a more detailed analysis of the results for the companies, the Brazilian SME were divided in two groups: companies in their early life cycle and companies of more mature nature. Hence, a first gross-cut can be made between the companies in an early stage of their life cycle and those in more mature life cycle stages. The former are often characterized by their failure to focus on aspects of general management. It became evident that the companies would have to solve deficiencies in human capital (e.g. management and professional competence) in order to realize their estimated growth expectations. The failure to focus on these aspects is an indicator for the high mortality rate of start-ups. Hence, the method is a tool to reveal critical factors that can be decisive about the failure or the success of a company in an early stage of its life cycle. In particular, the ICS helped these two start up companies to become aware of the fact that they lack the necessary management competence or intangible structures that would enable organic growth.

Contrary to these companies, the second group reported that major gains derived from contributing crystal-clear evidence of possible failures in the company’s coordinating and communication mechanisms as well as of some rigidities or counterproductive effects of the corporate culture. Thus, the implementation of an ICS should channel open and democratic discussions and facilitate and promote structured and strategic argumentation. Besides, the ICS factory generates a beneficial “side effect” of exchanging experiences and learning from other companies.

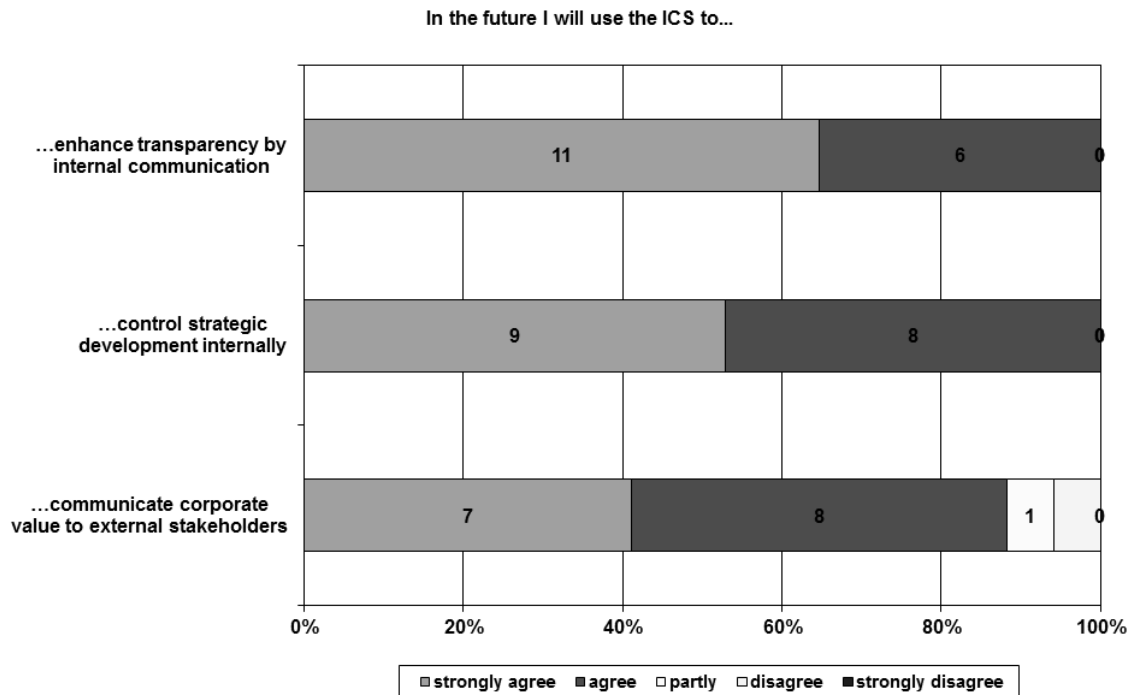
As a general result of the ICS Factory, the companies discovered that the human capital factor “Management Competence” is the one that needs to be developed the most. It appeared in most companies as the factor with the greatest relative impact on business results, but with low assessment. Hence, the companies should invest in the development of this factor because this leads to high major benefits.

## 4.3 Evaluation of the method

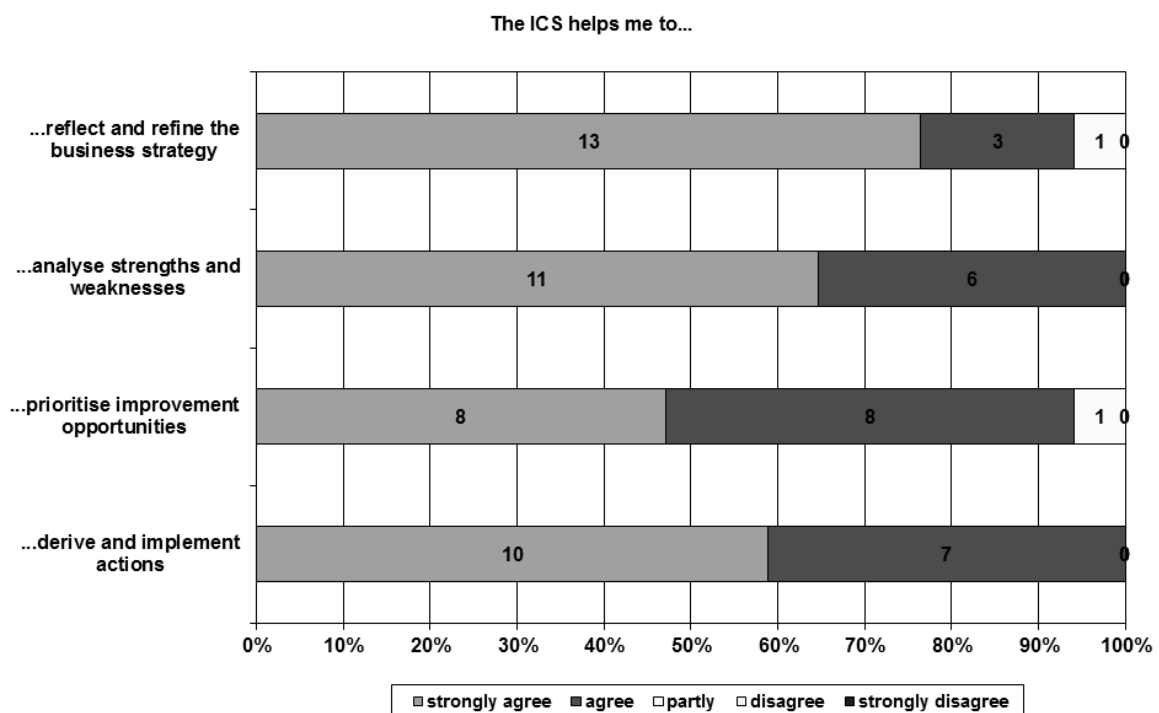
The method evaluation and the ICS Factory dynamics by the participating companies were surprisingly good. All 10 companies stated in a questionnaire based survey that they would recommend the ICS Factory to other companies.

As part of the survey the representatives of the participating companies were asked to cite where in the future they would use the ICS. The majority replied that they would use the ICS to enhance transparency by internal communication and to control strategic development (see Figure 4). A reason for this circumstance could be found in the fact that the participating enterprises are currently lacking necessary communication structures and therefore noticed difficulties in the strategic development internally. These deficiencies can be addressed with the help of an ICS.

Further the companies indicated that the method helps to reflect upon and refine the business strategy, to analyze strengths and weaknesses, to derive and implement actions and to prioritize improvement opportunities (shown in Figure 5):



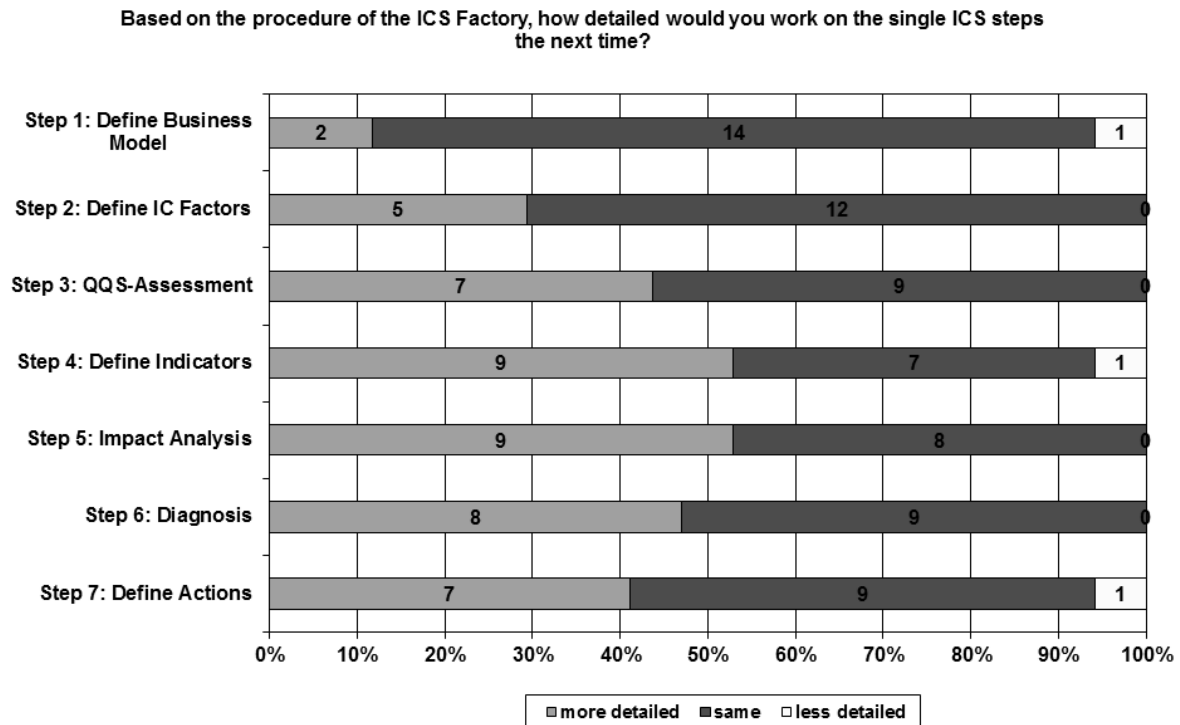
**Figure 4:** Perceived general benefits of ICS



**Figure 5:** Perceived management support of ICS

According to the results illustrated in Figure 6, steps 4, 5 and 6 were indicated as being the ones the companies would like to work on more detailed. Hence, the companies perceive these steps as being most important for the implementation of an ICS. Therefore, the moderator should focus on these steps to investigate the results and to conduct a more in-depth diagnosis.





**Figure 6:** Desired level of detail of implementation steps

Based on the feedback from the pilot-companies, the method proved to be an effective and efficient way to manage and focus on intangible assets, with the greatest potential to add value. Likewise, it worked remarkably well as a consistency check of their business model, emphasizing the importance of systematic management. The companies were able to introduce a new language and attitude, and gains from the exchange of ideas within the team became apparent extremely fast.

Commonly, companies undergo varying degrees of maturity over the course of their life cycle. First, companies begin their activities with a focus on the product and marketing, then seek innovation in internal processes necessary to the operation, and then prioritize the use of resources. In this case, the application of the method helps managers to conduct their business to a higher level of maturity and sustainability.

The results of the pilot project point to the need for post-implementation monitoring, especially in the interpretation and implementation of actions in a systematic way. The companies mentioned that they need more time to conduct a deeper diagnosis in order to better analyze the results. They refer specifically to the phases of impact assessment and loops as well as the planning of actions. Thus, more time and specific supporting measures should be considered after the workshop completion.

One of the important features of this process is the “Quality Assurance” policy. Only trained and certified moderators can apply the method in a future ICS-BR brand. Therefore, leading trainers, responsible for training moderators and auditors, who monitor the implementation process, should follow international standards required by the method.

The results of this pilot project also point to the need for promoting the application of the method in a larger number of companies. This approach should be an issue for development, following a strategy that makes it an available management tool for the vast majority of Brazilian companies. The method must be applied periodically to monitor the companies’ progress. So, we will receive reports with graphs that show the development of each factor of intellectual capital throughout the period.

By collating this information in the database, we are creating a “benchmark” to generate trends that will be useful to define policies for the sector. Using a standard method, this “benchmark” can be compared to similar international applications creating a network of “best practices and lessons learned” for Brazilian companies.



Taking into consideration the intangible resources, besides serving as a management tool, the ICS method also draws managers' attention to the need for change in processes and practices using the structured communication procedure of the method itself. In this respect, it is particularly beneficial to follow the first applications from the companies, as well as raising the level of certification of moderators who will carry out this monitoring.

Based on these considerations, it is necessary to understand the method from a broader perspective on the services, evolving toward a system of "Benchmarking" that includes performance information, management processes, methods and tools focused on managing innovation, among others. Following this development, the enterprises and institutions responsible for developing policies for the sector can strategize more sustainably.

In this sense, the adoption of the method should be treated in the medium and long term. The method is a paradigm shift in management per se, leading executives to adopt an innovation management process using the structure of internal and external communication inherent to the method.

Based on these issues, and considering that the application of the method in a massive way will provide substantial cross-information, it is extremely relevant to start developing a Competitive Intelligent System to help Brazilian companies achieving performance and competitiveness in a global scenario.

## **5. Conclusions**

### **5.1 Lessons learned**

Generally, companies go through various stages of the business life cycle as they mature. The top management task is to detect the different stages and thus implement the right strategy for each step. It is, therefore, fundamental that the top management understands what the implications of such a transformation process are. The companies of the first prototypical implementation in Brazil witnessed that in order to tap into market opportunities –and also ameliorate the impact of systematic risk – it is important that firms (especially SMEs) develop the necessary skills and acuteness to manage their IC. As the majority of SMEs still concentrates on conventional methods such as financial reports and traditional controlling systems to develop the company strategically, it became evident for the managers participating in the ICS Factory that systematically ignoring intangible resources bears the risk of failure in specific steps of strategic development, especially when crucial competencies are missing or the management procedures and structures do not meet the requirements of rapid growth scenarios. Therefore, implementing the ICS helped these managers to detect the critical success factors for their individual growth strategy and to derive the right actions for organizational development to ensure the successful realization of the respective strategy.

The first implementation of an ICS of this kind in Brazil has shown that the format of an ICS Factory maximizes efficiency and the cost-benefit ratio of ICS implementation for the companies. Furthermore, the pilot implementation has shown that companies would need more time to investigate the results and to conduct a more in-depth diagnosis, i.e. analyzing impact maps and loops as well as designing actions.

Therefore, in subsequent implementations it might be considered to concentrate the diagnosis on only one impact map for one field of intervention and to reduce the efforts on impact loops in order to focus on a more detailed design of concrete actions. This could either be realized by extending the ICS Factory by an additional workshop day or by using the original implementation procedure in three workshop days in the company. This would also allow integrating more employees in the implementation process as recommended by almost all pilot companies.

It is crucial that the ICS Moderators be well prepared for these diagnosis and action design steps in order to maximize practical benefits for the companies. Therefore, the moderators need to undergo various learning stages and achieve higher levels of certification. The main feature of the ICS moderator is to keep equanimity during the debates of the company representatives. Rather than actively participating in the discussion or giving advising on certain topics, the facilitator should lead the group towards a consensus in a natural and unobtrusive manner, assuring a representative voting and reasoning in the assessment process to help the participating staff to draw a representative picture of the whole company.

Lessons learned about the role of the moderator pointed out to two key aspects: the processes of selection and training should enhance the profile of the moderator to ensure the quality of his work, because this influences the quality of the result directly, i.e. the ICS report and derived conclusions on actions to be implemented. During the selection process, the senior ICS coaches should observe whether the knowledge and skills of the prospective moderators meet the requirements to perform the job. At the same time, the training program needs to highlight and strengthen those attitudes and skills that the moderator should possess to ensure a high level of quality and maximum benefit for the company.

The ICS has set the way for continuous knowledge-based transformation in the companies. Certainly, it is still very premature to conclude whether the ICS will have an effective and long-lasting impact on the performance and competitiveness of the Brazilian SMEs but the business behavioral shifts already observed are very promising. This will mostly depend on how capable the SMEs are of delving into the knowledge processes that explain or contribute to business success as well as of the willingness of the top management to take the helm of the IC-based transformation. The results of the pilot project also pointed out that there is a need to promote the method in a larger number of companies. To facilitate the implementation, particularly in companies that are not familiar with the approach, the method should be provided in smaller modules sequentially applied as each step already delivers valuable results. Thus, the approach will be easier usable for the vast majority of small Brazilian companies.

Based on these developments, it is necessary to understand the method in a broader sense by the implementing companies. The experience has shown that especially a systematic preparation of the Business Model and the IC Factors and the development of actions should be a subject of deeper investigation as it reveals the linkage between the strategic and operative level of the company's general management and hence, has a major impact on the sustainable use and benefit of the method for the respective company. In this respect, it is necessary to further educate the ICS moderators on these aspects as they carry out and supervise the whole implementation process.

An enhanced and extended training program for ICS moderators should be implemented in further projects in order to ensure the policy of quality assurance of the method as a whole. The method must be applied periodically to monitor the progress of companies in order to support sustainability of the prototypical implementations and to learn more about the specific aspects of ICS use in Brazil. In this way, the companies will be able to collect periodically data about the development of their Intellectual Capital. Data thus obtained will be used to design a database for a further benchmark of the companies IC. The aim has to be to compare the results and processes of those collected to one's own results and processes in order to create a network of "best practices and lessons learned" for Brazilian companies.

## 5.2 Future developments: Competitive intelligence system

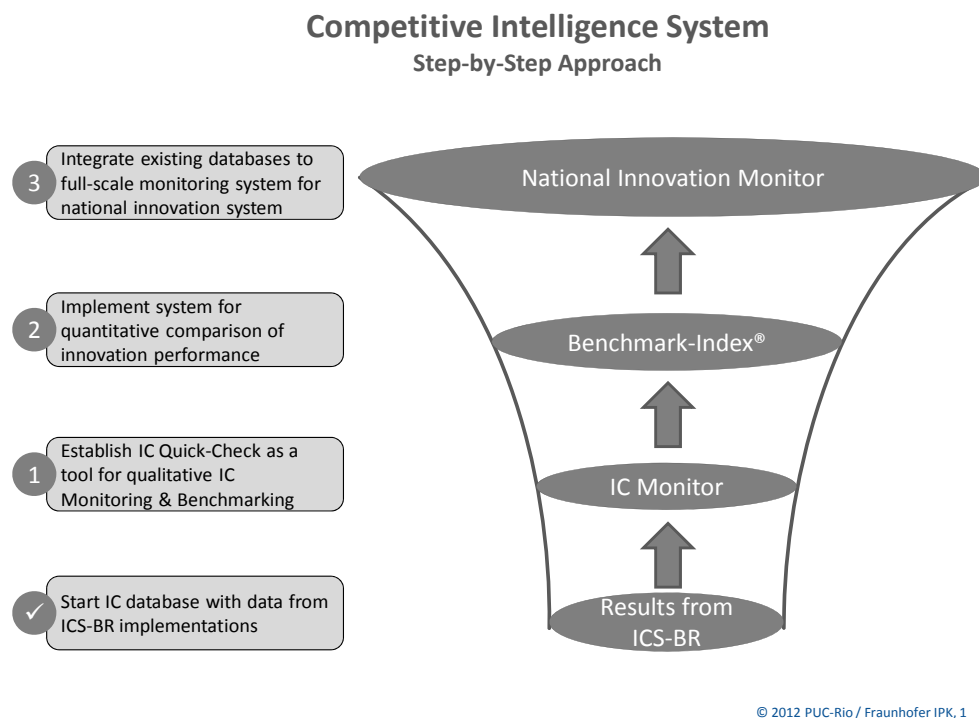
The Competitive Intelligence System, which is being developed on the basis of ICS implementations, aims at fulfilling the needs and expectations of four main stakeholder perspectives: Companies, Policies Makers, Financial Market and Research Organisations. A Central Database will provide indicators for economic and innovation performance, and the company's content of intellectual capital. The development of the database will connect existing monitor systems such as tax and education systems with companies' performance data at regional, sectorial and national levels.

The Database Implementation will comply with international standards to allow comparison and benchmarking at a national level with other countries, as a basis for transferring the best practices for successful development of a national innovating management system. Massive application of ICS method, as described before, will collect and gather substantial information from companies that must be structured in a database system. By mining the database, one can answer the following questions from the perspective of:

- Companies: How reliable is performance compared to others?
- Research: Which solutions, knowledge and methods does the industry need from applied research to promote innovation, improve performance and competitiveness?
- Financial Market: How can we assess the future potential and differentiate the risks of investments and how can we guarantee the optimal allocation of investments?

- Politics: Which are the industry's most critical challenges to ensure high productivity and sustainable innovation. Which new technologies must be developed to attend the strategic demands of the economy?

This innovating management system must be developed in a step-by-step approach and considering the intellectual capital factors as the resource base for innovation at the company level. Therefore, the entire system must be constructed based on a bottom up procedure from the results of the ICS application in each company, considered as the basic step, according to Figure 07.



**Figure 7:** Competitive intelligence system

The next step to be implemented, the IC Monitor level as shown in Figure 07, relies on a “quick-check” tool prepared as a qualitative Intellectual Capital Factors monitoring system (Alwert et al. 2010). Standardized measurement of innovation and overall economic performance of companies are compared at national and international level through the Benchmark Index (Kohl 2007) in the 2<sup>nd</sup> step.

As a final stage, one can analyze causes and effects to focus on programs in different parts of the national innovating management system, aligning industry initiatives with programs for R&D system, matching the maturity of industry sectors with applied research agenda, among others.

Two main issues justify a cautious approach during the implementation of the National Innovation Monitor: The confidentiality about the business information gathered from the companies, and the roles of each stakeholder. The system needs a quality assurance policy establishing a clear workflow with the responsibilities of each person involved: training leaders, moderators and auditors and defining the organization in charge of the database.

## 6. References

- Alwert, K., Bornemann, M., Meyer, C., Will, M, and Wuscher, S. (2010): Wissensstandort Deutschland - Deutsche Unternehmen auf dem Weg in die wissensbasierte Wirtschaft. Published by Fraunhofer IPK, Berlin.
- Alwert, K., Bornemann, M., and Will, M. (2008): Wissensbilanz – Made in Germany. Leitfaden 2.0 zur Erstellung einer Wissensbilanz, Guideline Published by the Federal Ministry for Economics and Technology, Berlin, [online] <http://www.bmwi.de/BMWi/Redaktion/PDF/W/wissensbilanz-made-in-germany-leitfaden,property=pdf,bereich=bmwi,sprache=de,rwb=true.pdf>.
- Edvinsson, L. and Malone, M. (1997): Intellectual Capital; New York, Harper Business.
- European Commission (2008): InCaS: Intellectual Capital Statement – Made in Europe. European ICS Guideline, [online] [www.incas-europe.org](http://www.incas-europe.org)

- Kohl, H., (2007): Integriertes Benchmarking für kleine und mittlere Unternehmen, Fraunhofer IRB, Stuttgart.
- Mertins, K., Fernández Y Fernández, E., Will, M. and Sequeira, C. A. (2012) How to Manage Intellectual Capital in Brazil? – Lessons Learned From the First Pilot-Implementations, Proceedings of 9<sup>th</sup> International Conference on Intellectual Capital, Knowledge Management and Organisational Learning, Bogota, Colombia.
- Mertins, K. and Will, M. (2008): Strategic Relevance of Intellectual Capital in European SMEs and Sectoral Differences. InCaS: Intellectual Capital Statement – Made in Europe, Proceedings of the 8th European Conference on Knowledge Management, Barcelona, Spain.
- Mertins, K., Will, M. and Meyer, C. (2009): InCaS: Intellectual Capital Statement. Measuring Intellectual Capital in European small and medium sized enterprises. ECKM 2009, Conference Proceedings.
- Sequeira, C.A., Du Toit, A.S.A. and Sewdass, N. (2012), “*Current State of Competitive Intelligence in Brazil*”, The 8<sup>th</sup> International Conference on Knowledge Management, Conference Proceedings, 4-6 September, University of Johannesburg, South Africa.