Assessing national and regional value creation

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Abstract *In the knowledge economy, the value of corporations, organizations and individuals is directly related to their knowledge and intellectual capital. This does not only apply to organizations in the private or public sector but also to entire nations. If intangibles and intellectual capital are important to organizations, they are also important to the productivity and competitiveness of nations as a whole. The question we try to answer is how can we better understand the dynamics of intangibles on a national scale?*

Keywords *Knowledge management, Benchmarking, Intellectual capital*

The knowledge economy

In the knowledge economy, the value of countries, regions, organizations and individuals is directly related to their knowledge and intellectual capital (IC). Can the new corporate view be translated into a new perspective on national performance? Can the Scandinavian perspective of *"naringsliv" as nourishment for life* be a clue to the knowledge economy beyond the concept of business? Could there be a new ecosystem or DNA for the knowledge economy?

According to the OECD report, *Scoreboard 2001 – Towards a Knowledge-Based Economy*, the countries with knowledge intensive activities will be the winners in terms of future wealth creation. In that report, 30 member countries are scored according to IC investments such as research and development (R&D), education, patents, ICT etc. Nordic countries score well on this list:

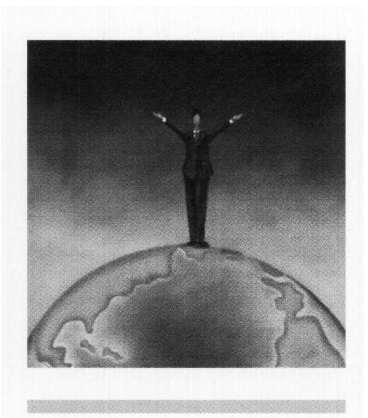
- Finland is described as the country with the most rapidly growing investments into R&D.
- In Norway several initiatives have been prototyped. One is to understand IC in local communities (e.g. Larvik Kommune) or regions (the Norwegian oil plateau).
- Denmark set up a National Competence Council for collaboration between the government and the business community to map the knowledge competitiveness of Denmark
- In 2002 the St Paul region in Minneapolis was ranked number one on the world knowledge competitive index ahead of Silicon Valley and Austin, Texas.
- In 2003, Dubai was formally inaugurated as leading knowledge village (benchmarked with Singapore).
- So called knowledge cities are emerging (e.g. Barcelona) that shape the urban design for the knowledge economy and its knowledge workers.

During the 1990s, the research by Paul Romer at Stanford University, USA, has highlighted the exponential value of multiplying knowledge as an exponential value curve, called *the law of increasing marginal utility*. In other words the more connections, relationships and interactions exists in a network the higher the potential value. It might also be described as 1 + 1 = 11. This is very evident in the case of software development where the value is growing with increased usage.

Only investment into knowledge will give us the opportunity to improve the wealth of nations. As such, we need a new map of knowledge assets, a map of regional IC, instead of the old agricultural and industrial plans so often found in regional planning offices.

The new corporate longitude

The logic of corporate longitude is based on a story from the 18th century. At that time, ships were unable to navigate with any precision from east to west. They were lacking control on an important dimension and consequently many 18th century ships lost their bearings. In the same way that today's analysts who only concentrate on financial capital do as they are missing out an important dimension of performance. The case of Enron illustrates a recent example of a similar problem in the world of accounting. In the public sector it might be even worse, with an increasing focus on achieving the financial budgets. The result is that public sector organizations are being starved of the assets that will safeguard their future. Extensive cutbacks are robbing them of the crucial nourishment offered by intangibles such as experts, know-how, R&D, learning as well as alliances and networks for social innovations.



The solution to the 18th century longitude problem was solved by John Harrison, a watchmaker who developed a tool to help ships to position themselves and therefore understand all the vital dimensions of their journey. In order to get a deeper understanding about the principles of wealth creation, it is essential to develop a similar understanding of the non-financial performance drivers. An approach whereby assets are simply recorded on a balance sheet is far too narrow. A new approach to accounting is necessary to include the intangibles and non-financial assets such as knowledge creation, networks, and relationships. The wealth of organizations, as well as the wealth of nations, lies in the space in which human capital and structural capital interact.

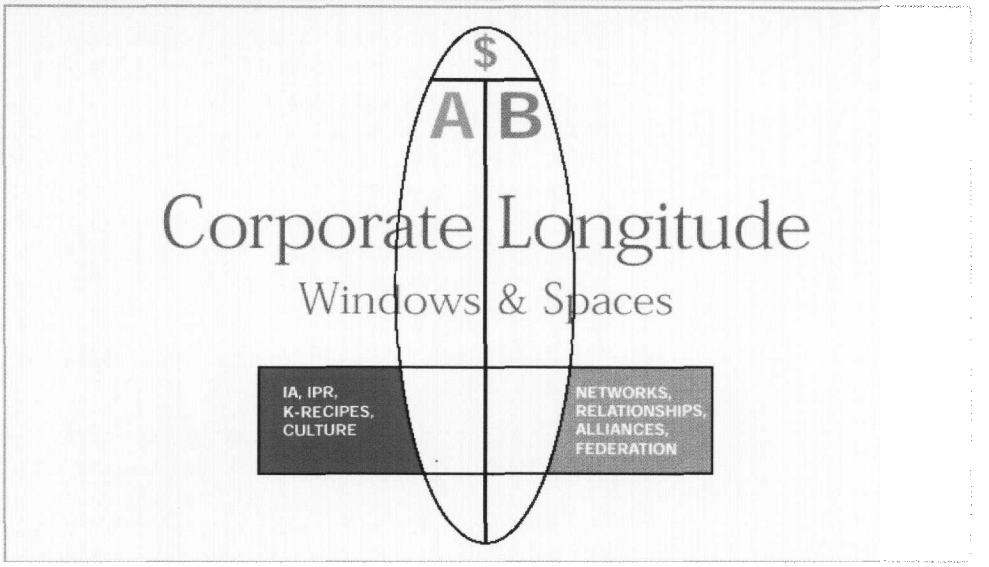
Currently, organizations, as well as societies as a whole, are like 18th century ships, charting their positions with only one-dimensional navigation tools. Plotting a course solely based on traditional financial reference points leaves them blind to the opportunities on the lateral horizon. Most attention is still devoted to the financial dimension, even in a world where tangible assets of most organizations only represent between 1 and 25 percent of a company's stock market value. For these assets the organization has CFO and controllers, ERP systems and the whole profession of auditors. But what do we have for the intangibles and intellectual capital? Maybe the customer relationship management systems? In 1991 Skandia appointed Edvinsson as director of IC to address this shortcoming. However, even today it is still an exception.

Until sailors could measure longitude, they were frequently lost at sea. The same is the case for our leaders of firms or countries today. The difference between financial and the knowledge based view demands a shift in the way we view the organizations, regions, and countries. We have to take the lateral perspective into account and address value creators such as alliances, networks, cultural context, know-how and other intangibles.

Figure 1 is an illustration of corporate longitude as a lateral dimension of intangibles inside and outside the firm's vertical balance sheet. What is needed is a window for those new value-creating spaces.

Value is created in the interaction between people (human capital) and the organizational structural capital such as R&D processes. Nonaka (1994) is referring to this as knowledge creating dialectics or *Kenetics*. He also referred to them as *Ba*, which literally means a space for appreciation in Japanese. In Skandia's case they were labeled *Future Center*. The Skandia Future Center, established in 1996, focused on the value creation by experiential knowledge exploration. It became an arena where employees could enter into the future and then return to

Figure 1 The corporate longitude © Leif Edvinsson



the present with new insights. Another such interesting space for renewal was created by the Danish government. In February 2002 the Ministry of Economics launched *Mind Lab*, which is similar to the concept prototyped at Skandia or the Japanese concept of Ba. Mind Lab is however a center with the aim to nourish knowledge management in the public sector[1].

IC mapping and measurement

The 500-year-old accounting system is focused on historical costs and transaction reporting. This backward looking metrics approach leads to growing inaccuracies in the understanding of value creation. Furthermore, it results in misallocation of resources by investment institutions. What is needed is a longitudinal system that allows us to visualize, cultivate and capitalize on these value creating interactions. Some nations are already experimenting with new approaches. Denmark, for example, launched a project in 1998 looking at intellectual accounting that aimed to help transform Denmark from an industry to a knowledge-based economy. In 2000 and 2002, the Danish government published guidelines for intellectual capital statements[2]. In Norway several initiatives are in progress. The local municipality of Larvik has been prototyping both annual IC reports as well as IC-ratings for its activities. In 2002 the Norwegian Association of Financial Analyst has launched guidelines for reporting on knowledge capital[3]. The Invest in Sweden Agency (ISA) was the first national investment organization to apply the latest understanding of intellectual capital to assess and compare national competitiveness and performance in its annual report for 1999. They state that "Intellectual capital forms the root of a corporation – and of a nation – that supplies the nourishment for future strength and growth". Sponsored by the UN Development Programme, Bontis and his colleagues (2002) conducted research on IC in ten Arabic countries. In the study, Bontis quantifies the level of IC for each nation and outlines an IC index, which can be used by each nation to rank themselves against their peers, and indeed to learn from the experiences of other countries. One of the more recent reports on IC on a national level was presented by Pulic (2003) and his team assessing the efficiency in the Croatian economy based on an IC assessment.

Most public organizations, institutions, and governments are under increasing political pressure to increase their policy and output transparency. The development of intangible resources is an essential issue for public organizations and governments as it impacts on future growth and employment. In the same way as private organizations, countries and regions must develop innovative approaches, research programs and development, systems of education, fiscal policies and public procurement policies.

The dynamic value of IC at national and regional level: the IC-dVAI® approach

Certainly one way of looking to the longitude of tomorrow lies in considering intellectual capital from a dynamic perspective. As it has been underlined, over the last five years, several interesting initiatives were put in place at the level of nations, regions, other non profit organizations. Most of these initiatives consisted of analyzing existing data, basically at the input level – output level, using existing information. But we need to go further and focus on the organizational and dynamic dimension of socio-economic performance. The IC-dVAI® (Intellectual Capital dynamic Value) (Bounfour, 2000, 2003a) is one approach that defines metrics from a dynamic perspective. This approach has been implemented in different contexts, at microeconomic as well as at macroeconomic levels. Indeed, as far as metrics are concerned, *these have to be defined dynamically* along four important and interrelated dimensions of competitiveness:

1. *Resources as inputs* to the production process: tangible resources, investment in R&D, acquisition of technology, etc.
2. *Processes.* It is through processes that the deployment of a dynamic strategy founded on intangible factors can really be implemented: processes of establishing knowledge networks, and competencies inside and outside organizations; processes of combining knowledge; just-in-time processes for products and services and the whole of the outputs; processes of motivation and training of personnel, processes for building social capital and trust, etc.
3. *The building of intangible assets (intellectual capital).* These can be built by the combination of intangible resources. Indeed, combining intangible resources can lead to specific results such as collective knowledge, patents, trademarks, reputation, specific routines, and networks of cooperation. For each of these assets, indicators and methods for their valuation can be developed.
4. *Outputs.* It is on this level that performance of organizations is classically measured, through the analysis of their products and services' market positioning. Here, one will be interested in indicators such as those relating to market shares, quality of products and services, barriers to entry building, establishment of temporary monopolistic positions.

How metrics are calculated according to the IC d-VAL®

The IC d-VAL® defines and measures IC in terms of relative indexes as well as in monetary terms. The starting point is a clear definition of the main components for the four dimensions – resources, processes, assets and outputs. Then a benchmarking process is conducted for these items. Basically we compare the position of a company or a nation to those considered as best performers. The benchmarking exercise leads to calculating *ad hoc* performance indexes, as well as to a composite index per country, region or community. It is those indexes that are used in this paper. At the corporate level, we usually express intangible assets in monetary terms, hence the possibility of making the link between relative performance indexes and financial valuation. But for communities such as nations, regions or cities, the exercise is more complex. Ongoing research is trying to translate intangible assets of communities into monetary terms (e.g. Bounfour).

IC performance at national level

This framework has been used to collect benchmarking information on the performance of EU innovation systems using the Innovation Trend Chart data as proxy values (Bounfour, 2003b). Below we will present the initial findings of this initiative.

Many data sources tend to suggest that the EU region is lagging behind the USA in terms of efforts – i.e. investment in intangibles – at the input level (RCS Conseil, 1998). The process level refers specifically to the importance of the organizational dimension, i.e. how European companies and other organizations innovate (including new organizational forms for managing and developing their intellectual capabilities). Here, unlike the input dimension, Europe is taking the lead. Since organizational innovations are critical components for building competitive advantage, it is important to note that European companies benefit from a real advance in one

component of this subject: the modeling and reporting on intangible investment. At the macroeconomic level, by using the Innovation Trendchart data as proxy metrics, we observe that Nordic countries in Europe are outstanding players: Denmark for the percentage of collaborative innovations among SMEs; The Netherlands, Denmark, Sweden for the percentage of Internet home access; and Finland for ICT markets/GDP ratio. At the output level, several studies have stressed the existence of a possible "missing link" between the input effort made and the observed performance. The Nordic countries in Europe also take a leading position in the global comparison (Sweden is the best player in terms of the ratio: percentage of innovating exports on total sales; The Netherlands are the best in class for the unemployment rate; Finland is a good player in new-to-market products, thanks to Nokia' success).

At the level of intangible assets, proxy asset indexes are used to distinguish between structural capital (mainly patents) and human capital. For structural capital, the resulting indexes clearly indicate that again Nordic countries perform best: the number of scientific publications per million. The same applies for two major indicators for patenting: EPO – European Patent Office and US PTO Patent Office indexes. For human capital, data attest better performance for Nordic countries, except for one metric: the percentage of S&E – science and engineering graduates among 20-27 aged population (UK is the leading country here).

Finally, using these data as a starting point, we can see that, on average, Nordic countries are ranking well in Europe (Figure 2). This might be related to their good performance at the organizational level but needs further research, particularly in order to understand how these systems function, what makes them unique and how path-dependent they are. Any measurement approach has to take these dimensions into account. Indeed, if a "naïve" perspective were to consider that these countries are the benchmarks for intangibles, the real issue is to document to what extent this might be meaningful for the other EU countries. Could, for instance, a process of 'learning-by-comparing" can be implemented. What is the level of absorptive capacity of the other systems for potential identifiable best in class routines taking into account the difficulties in transferring and comparing practices for managing IC (Marr, 2004).

IC performance at regional level

The same reasoning can be applied at a regional level. By using different – but limited – proxy data for measuring regional performance in terms of IC in the case of France, a benchmarking index of IC performance could be created. The initial results tend to suggest that two regions are performing particularly well: Ile de France (Paris area) and Midi-Pyrénées (Toulouse region), whereas Corsica is lagging behind. But here again, the real challenge for policy makers lies at the organizational level: what kind of "learning-by-comparing" can be implemented among regions of France as well as with other regions in Europe as well as outside (Figure 3).

Figure 2 IC performance indexes for European countries, according to the IC-dVAI® approach

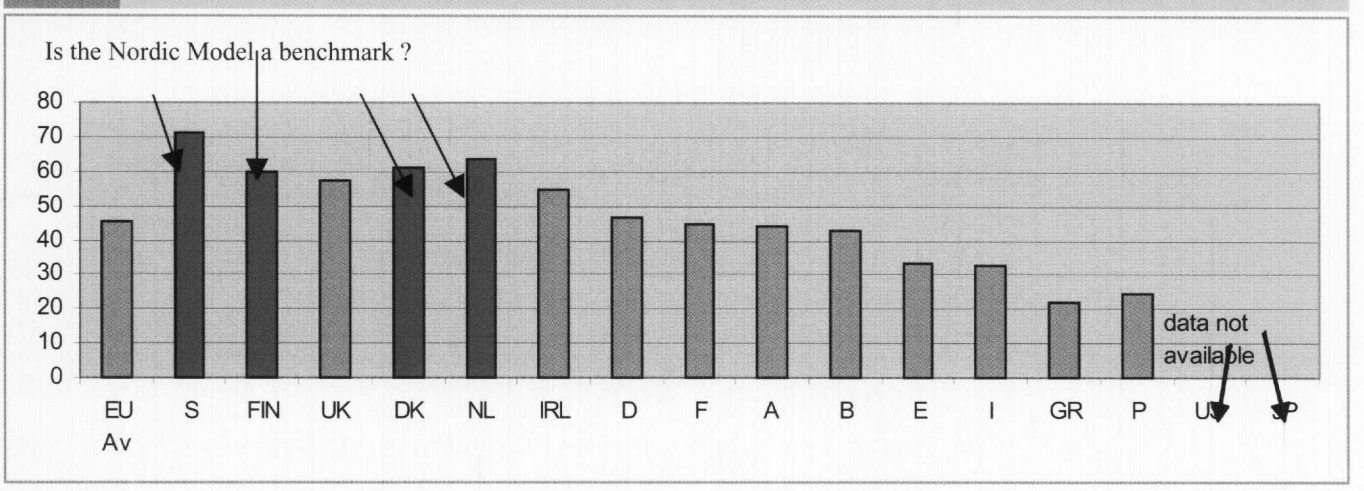
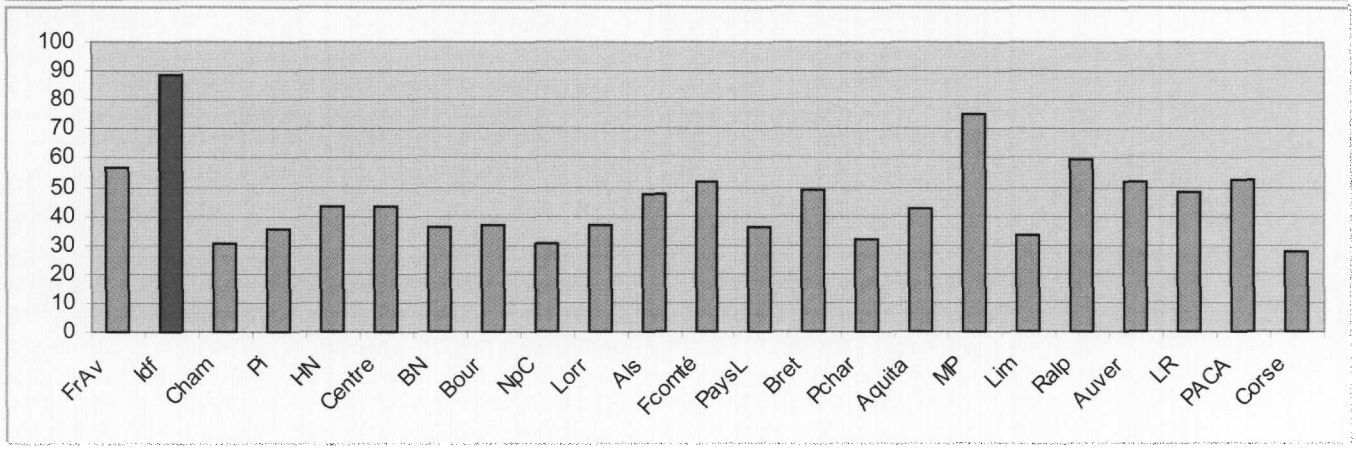


Figure 3 IC Performance Indexes for France Regions, according to the IC-dVAI® approach



Conclusion and implications

Intangibles are a major issue at both microeconomic and macroeconomic (community) levels. At community level, several initiatives have been taken, especially in Europe that need consolidation and better development. More research is encouraged in order to better understand the value drivers of regions and counties and how we can better manage them in order to manage for increasing value. Indeed, what we observe now is a strong weakness in the available tools both for statistical reporting and policy making. From this perspective, intangibles are a key driver for producing new ways of viewing the policymaking arena out of the "traditional boxes" of things. This is the main perspective we named: IC for communities. Obviously, the deep change in socioeconomic systems all over the world call for new approaches to wealth creation and beyond that to the social contract building. In these areas, researchers, policymakers are now deeply challenged. It is the role of intangibles – as a perspective – to contribute in dealing with those challenges.

Notes

1 For more information see www.mind-lab.org

2 For more information see www.vtu.dk/icaccounts or download from www.danmark.dk/netboghandel

3 See www.finansanalytiker.no

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