

Intellectual capital within Iberian municipalities (network)

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Abstract

Purpose – This article seeks to study the implementation of an intellectual capital model in a network of cities.

Design/methodology/approach – This article provides a case study consisting of 25 key development institutions from six different border cities in Spain and Portugal.

Findings – Using the SWOT methodology, a set of strategic criteria was established to guide local authority decision making. An internet-based technology platform, with a registered brand, has been set up and is currently functioning (www.redkognopolis.org). One of the main findings of the case concerns the use of key organizations. Certain aspects have been identified which need to be improved in the future.

Research limitations/implications – Although the interpretations offered are plausible in the context of the case studies, it may not be correct to generalize to other situations.

Originality/value – The proposal has introduced several innovative elements: it is a network, where the city entities work together by sharing knowledge; it consists of small cities; and it involves cross-border interaction among Spanish and Portuguese regions. Formulas have been found to increase cooperation.

Keywords Knowledge management, Cities, Competitive strategy

Paper type Case study

Introduction

The KOGNOPOLIS©[1] project has created a cross border network of knowledge cities, thanks to financing by the European Regional Development Fund (FEDER) through the program INTERREG IIIA Spain-Portugal, specifically in the Extremadura/Centro and Alentejo regions on the border between the two countries.

In the work of Pasher (1999), Bontis (2002, 2004), Viedma (2004) and Chatzkel (2004), we find the first approximations to the IC of Regions and Cities. For many authors competition between cities is a reality (Porter, 1998; Begg, 2002; Cheshire, 1999; Lever and Turok, 1999; Sobrino, 2002). Nevertheless, there is no unanimous agreement as to the factors that determine what constitutes a knowledge city. However, more and more research is being carried out into the intangible factors that are clearly required to obtain a sustainable competitive advantage (Lever, 2002; Cappellin, 2003).

Through the exhaustive explanation of a specific case, this article seeks to set out the experience of these two Spanish and Portuguese border regions between 1 January 2003 and 31 March 2005. We shall seek to reflect the situation these regions find themselves in and show the benefits obtained (some of them still potential) through the development and implementation of the KOGNOPOLIS© network.

We propose that the “Raya Ibérica”, a border area between Spain and Portugal covering the regions of Extremadura and Alentejo, be considered as an economic concept and not just a geographical space. To achieve this we must not only improve communication infrastructure

and strengthen the businesses base, but also implement a network of cities, competitive in terms of knowledge.

The work has five main sections. Following the introduction, we deal with questions relating to methodology and then earlier applications in the area of intangibles. We continue with a description of the principal aspects of the KOGNOPOLIS© project, ending up with the conclusions.

Methodological approach

The investigation of a small group of cities can be considered an exploratory case study (Yin, 1994). Case studies are normal methods in researching contexts and organizations, and have been used to investigate the management of information systems (Olson, 1981; Robey, 1981, 1983; Blanton, 1992; Muzumdar, 1997; Thompson, 1999). It is a fairly common qualitative method. The justification for the choice of a case study methodology is based on the premise that the KOGNOPOLIS© network has been set up as a pilot project.

We shall, therefore, basically follow the revision carried out by Cepeda (2003, pp. 104-108), which brings together the ideas and recommendations of various researchers. The choice of an exploratory case study for the research was supported by the following considerations:

- The use of research based on observation and description for the detailed study of a situation is recommended (Long *et al.*, 1985, p. 179). According to this point-of-view, a case study is typically qualitative, concentrating on documentation and the explanation of specific situations. In this way, the researcher does not control and cannot manipulate the situation.
- According to Merriam (1988, p. 10), qualitative case studies are the preferred option for researchers seeking to “understand, discover and interpret rather than test hypotheses”. The exploratory case study can be used to test theories using a deductive method. Following an examination of published studies, which lead to the preparation of a theoretical proposal, the researcher personally visited the institutions where he was going to carry out the case study and develop the field work, using interviews, observations and the revision of the existing documentation relating to the study purpose.
- A case study is recommended as a suitable way of managing an empirical investigation into a specific and current phenomenon in its real context, using multiple sources of evidence (Robson, 1993, p. 52).
- According to Yin (1994, p. 13), a case study investigates “a current matter or event in its real context, especially when the limits between the matter and its context are not clearly evident”. As such, the research is based on various sources and evidence, while data collection is based on “the theoretical proposals of previous studies”.

To summarize, the exploratory case study methodology agrees with many existing positions in the literature. We can find case studies with a territorial theme in González *et al.* (2004) and Ergazakis *et al.* (2004).

In the research presented here, the analysis of the case study took place in the months of February and March 2004. During this time the institutions belonging to the KOGNOPOLIS© network were visited in order to obtain all the necessary information, carry out the requisite interviews and ensure the study was adequate, understandable, etc.

A 23 strong panel of experts, which used the Delphi methodology and consisted of twelve experts in knowledge management and eleven in city competitiveness, was then used to validate the assessment criteria.

The selection of the cities that currently form the KOGNOPOLIS© network, as well as the organizations and business bodies belonging to these cities, took place in the initial phases of the project. Through different studies, analyses, reports and the corresponding interviews and meetings with the people responsible for these organizations, the following selection criteria were applied:

- Population greater than ten thousand inhabitants.
- Population growth greater than 5 percent in the past ten years.
- Economic level not less than 3 in a scale of 1 to 5[2].
- Unemployment rate less than 8 percent.

The following requirements were also of particular interest:

- Degree of interest shown by the local authority.
- The availability of a team to help the researchers.
- The presence of knowledge intensive companies in these towns.

Background on territorial applications

Here we analyze the most recent attempts at measuring the intellectual capital of different nations, together with the particular emphases of the different models that have been used to develop this tool in each specific case.

Arguably the first country to attempt to measure and analyze its intellectual capital was Sweden in its report on intellectual capital. The report synthesized the principal aspects of one of the first countries to seriously invest in knowledge as a deliberate and explicit KBD policy. In the industrial sector, its level of investment in innovation is the highest in the world (more than 7 percent of sales) while in the service sector it is around 4 percent (Rembe, 1999).

Similarly, we can consider the work of Pasher (1999) as one of the precursors in the measurement of the intellectual capital of a nation. Her work is the result of a valuable cooperation between experts in different areas. The report on the intellectual capital of the state of Israel is the product of an effective collaboration between experts in different fields (economic, social, political, etc.).

In the last few years, various studies have been carried out applying models to different nations. Bontis (2002) studied the Arab region, with a population of 280 million people that is expected to grow to 380 million by 2015. The countries included in the study were: Algeria, Bahrain, the Comoro Islands, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates and Yemen.

Finally, we cite an analysis of intellectual capital applied to a city, the cities' intellectual capital benchmarking system (CICBS) model of Professor Viedma, based on the Skandia navigator. The CICBS model is a new methodology for measuring and managing the intellectual capital of cities (Viedma, 2004).

The application of systems of knowledge management in specific areas has been diverse. Various cities around the world have undertaken pilot schemes that have achieved differing levels of acceptance. The majority are now fully developed.

Among the best European experiments in this field, the following deserve special mention:

- *The digital hub (Dublin)*. This is a project promoted jointly by the Irish government, Dublin City Council and the Irish Development Agency to revitalize the old industrial district of

Dublin known as Liberties, through a series of schemes to create a cluster for the creation of digital content.

- *Arabianranta (Helsinki)*. This project foresees the regeneration of a badly polluted former industrial site in Helsinki (the Arabia pottery), through the building of 3,400 dwellings, educational establishments, student and researchers' residences, and business units. A total of 40 percent of the dwellings are earmarked for social housing.
- *"The 22@ Project" (Barcelona)*. This project is very important to the Poblenou district of Barcelona, which is trying to recover traditional businesses in the area through the use of new technologies. Its ambitious town planning and novel management approach make it one of the most characteristic examples of this new "technological urbanization".

A comparative analysis of some of these initiatives, and others in the Iberian Peninsula, has allowed us to identify certain common elements (Zaragoza City Council, 2003, pp. 72-81), such as: political leadership, flexibility in the use of space and business starter units, qualified personnel, quality of life and good living conditions.

Project development

Network objectives

The research carried out in relation to the KOGNOPOLIS© project ("Network of cross border knowledge cities") sought to fulfill the following general objectives:

- Create awareness of the mutual benefits related to the gradual consolidation of the area, establishing networks that facilitate a common outward projection.
- Stimulate exchanges of information between public bodies, local administrations, research centers, businesses, etc., that help to increase the competitiveness of cities, and fundamentally, reduce the effects of their peripheral location.
- Stimulate cooperation between the different agencies involved, extending this to areas such as technological innovation, dissemination of new technologies, knowledge management, etc.
- Consolidate and institutionalize mechanisms for cross-border cooperation (through the KOGNOPOLIS® network).
- Strengthen local economies, widening their horizons and preparing people to provide ever more specialized services.

At the same time the project has taken into account the following specific objectives:

- Identify the competitive advantages of specific cities, the factors that determine their success, and the way this knowledge can be shared with each and every member of the network.
- Emphasize the importance of knowledge in the progress of cities.
- Create intranets and extranets to improve communication between members of the network, relational databases, etc.

"The Digital Hub is a project promoted jointly by the Irish government, Dublin City Council and the Irish Development Agency to revitalize the old industrial district of Dublin, known as Liberties, through a series of schemes to create a cluster for the creation of digital content."

- Establish inter-municipal and inter-business cooperative networks, mainly in areas of knowledge management, but also in other areas such as social integration, business development and area planning.
- Encourage cooperation between bodies in the regional public administration on both sides of the border, as well as cooperation between these and economic, social and cultural agents.

The proposal has various innovative elements, among which we can emphasize (Bañegil and Sanguino, 2003):

- It is a network where the city entities work together by sharing knowledge.
- The subjects in our study are small to medium sized cities. The groups of cities that are dealt with in published studies rarely include such small cities, but usually large cities or provincial capitals. Approximately 20 large and medium sized cities from 5 continents are participating in the cities project (www.proyectocities.org). The EUROCITIES project (www.eurocities.org) is trying to promote networking between Europe's largest cities.
- A cross-border factor has been introduced. The cities integrated in this network are located on both sides of the Spanish-Portuguese border, specifically in the regions of Extremadura and Alentejo.
- The character, image and positioning of the KOGNOPOLIS® brand are also innovative. Based, fundamentally, on achieving a well known image abroad and on the projection and continual reinforcement of this image, the individual members of the KOGNOPOLIS® Network are beginning to feel that they belong to a single organization which exchanges information, solves conflicts, adopts new focuses, etc., to such extent that the geographical area is becoming an intelligent region.

Results

Analysis of the strengths, weaknesses, opportunities and threats (SWOT analysis) of the institutions of the KOGNOPOLIS® network. Following the selection of the cities associated with the brand, a SWOT analysis was carried out (see Figure 1). The objective was to identify the success factors of every city in the network, to help define suitable strategies in the priority areas of promotion and investment, and to optimize available public and private resources. Questionnaires were filled in and interviews held with representatives of the institutions associated with the network (16 Spanish and nine Portuguese) to determine the current state of affairs.

In defining crucial factors, the project's priority impact areas were taken into account: employment, evaluation of culture and patrimony, development of e-government practices, municipal financing and strategic planning. The appearance of a culture of networking implied a significant incorporation of new knowledge and abilities. The reduced size of the cities, and the low population density in the surrounding areas, means that with just one synergetic cooperation optimum solutions can be designed. Competition from within the area would mean the common project was not viable and would prejudice individual projects when considered separately.

Figure 1 summarizes the SWOT analysis applied to the network. In the figure the analysis is linked to the identification of strategic areas considered to be priority.

Organizational structures and the management of intangibles (knowledge management). To identify intellectual capital in the network, we have taken into account not only the basic models (Kaplan and Norton, 1992; Edvinsson and Malone, 1997; Stewart, 1997; Sveiby, 1997; Bontis, 1998) but also other research that has offered innovations in recent years. Specifically, the generation of variables or items to be measured has basically followed the scheme of the "Modelo Intellectus" developed by the Research Centre for the Knowledge Society (CIC) located in the Madrid Scientific Park (Bueno, 2003).

In order to obtain an adequate reference of pioneering studies covering the measurement of intellectual capital some models, which seek to measure the intellectual capital of nations

Figure 1 SWOT analysis of the KOGNOPOLIS© network

	OPPORTUNITIES	THREATS
	Awareness of the need of a new development model based on knowledge	Few economic and financial resources
	Existence of many local sources producing information and knowledge	Poorly qualified population, making it difficult to communicate a new knowledge-based strategy
	Identification of a potential axis for securing knowledge intensive logistic activities	Difficulties in formalising networks and relations among the actors
	Impulse created by the KOGNOPOLIS © network	Pressure of political cycles
STRENGTHS	<u>STRATEGIC AXES</u>	<u>STRATEGIC AXES</u>
Multiplicity of networks of personal and professional contacts		
Existence of practices of document management in the agents	Reinforce positive effects of the city's position in the network	Articulation of complementary economic strategies in different chains
Practices of multi-channel communication	Firm up large complementary and non-competitive regional projects to optimise the physical location	Exploit value chains of economic sectors and their complementary nature
Good installed technological infrastructure		
Culture and heritage highly valued as means of strategic differentiation	Exploit the patrimonial wealth and the network's specific orientation	Promote benchmarking practices and competitive articulation vis-à-vis other areas
Existence of chains of economic specialization	Creating and adding value to integrated and complementary circuits is crucial in the context of the network	Promote comparative learning between areas
WEAKNESSES	<u>STRATEGIC AXES</u>	<u>STRATEGIC AXES</u>
High risk aversion		
Absence of mechanisms for evaluating results and employee job satisfaction	Strengthen the connection and cooperation between agents	Win the confidence of key agents Local authorities should lead this process, sharing their strategic vision. The promotion of agreements and networks is of special importance
Weak relations between research institutions and the community		
Little evidence of job creation	Local entities and the agents included in the Network ought to promote economic and social connections as a priority measure. It will only be possible to get the best out of the multiple sources producing information and knowledge, and place these at the service of the community and its development, if there is a culture of association and cooperation	Rationalise and optimise economic and financial resource capture Setting up networks and agreements and making them more dynamic should be a promotional tool for the effective management of available resources, within a context of mutual learning
Limited practices of e-government and e-commerce		

Source: Adapted from Bañegil *et al.* (2005, p. 51)

and regions, predominantly the work of Bontis *et al.* (2000), Bontis (2002, 2004), Pasher (1999) and Viedma (2004), were taken into account.

After carrying out the previously mentioned SWOT analysis, the characteristics of the management of intangibles were investigated more thoroughly. This was achieved by

surveying the local entities about knowledge management in their own institutions. Here are the most significant results:

- The new problems organizations have to handle are not always viewed as opportunities for developing the personal capabilities of its members.
- Innovation is not always well received or encouraged.
- The organization's experiences are not documented, nor included in work processes, nor available for other members to consult.
- There is no performance evaluation process (satisfaction questionnaire, labor climate, etc.).
- Institutions admit to not using all the useful knowledge in the organization.
- Systems for the protection of knowledge that stop third parties using it in a fraudulent way are not in place.
- There are no systems installed for measuring organizational knowledge and verifying its evolution.
- There are no systems available for discovering employees' satisfaction
- It is not normal to have learning groups and practice communities.
- Attendance at events that allow the organization to relate to other entities is infrequent.
- It is not normal to participate in local development projects.

At the same time, the integrated analysis of cities (Badajoz, Almendralejo and Talayuela in Spain; Évora, Elvas and Portalegre in Portugal) identified a set of orientations that require special attention from politicians:

- Identify the principal agents and win their confidence.
- Rationalize and optimize the capture of economic and financial resources.
- Reinforce the connection and cooperation between different agents.
- Reinforce the positive effects of a city's position in the network.
- Explore the patrimonial wealth and the network's specific cultural orientation.
- Articulate complementary economic and social strategies in the different clusters.
- Promote benchmarking practices and competitive elements *vis-à-vis* other European areas and other countries.

Taking into account all the above, an IT platform (www.redkognopolis.org) was developed based on an intranet that is used as a tool to support the day-to-day management of the agents involved (a space for sharing, reflecting, offering experiences of interest to the participants, etc).

Having analyzed the case, we have also been able to define a series of variables that are being investigated in a subsequent quantitative study. Several of the KOGNOPOLIS® case conclusions are being extrapolated at a national level. Following an exhaustive testing process, these variables, relating to the intellectual capital of cities, are:

- Support for local authorities so that their employees improve and update their skills and knowledge.
- Establishment of systems for investigating employees' job satisfaction.
- Employee commitment to local authorities' objectives.
- Dissemination of a corporate culture (values, conduct, etc) amongst employees.
- Existence and habitual access of employees to an Intranet.
- Existence of an information and document management system.

- Participation in Research, Development and Innovation (R + D + i) projects whose effect is to improve society (with external co-financing).
- Importance of long term relations with suppliers, partners, etc.
- Various channels for communicating with the public (municipal edicts, letters, radio announcements, internet, etc.)
- Agreements with other local authorities to form networks.
- Cooperation agreements with the regional public authorities.
- Promotion of investment (proactive conduct) in environmental projects, or those of a social nature.
- Increase in regional development projects in recent years.
- Cooperation agreements with institutions such as NGOs, Foundations, etc.

Conclusions

Case analyses can be used to evaluate the implementation of tools for measuring the intellectual capital of a network of cities. In our case, the methodology has been applied in a cross-border geographical context, an aspect that adds special characteristics not considered in previous research.

Some of the results obtained are unusual. However, they can be understood if we take into account the fact that we are dealing with cities separated by an international border. It is this barrier we are seeking to eliminate through the KOGNOPOLIS© project. The project's technology platform is up and running (www.redkognopolis.org).

Throughout the investigation we have observed a change taking place in local administrations, such that intangible assets are starting to form part of the management of the area.

In the case of the KOGNOPOLIS© network, we have been able to develop a series of instruments so that the cities belonging to the network can more effectively manage knowledge.

Amongst the specific objectives, it is worth mentioning the development of the image and the positioning of the KOGNOPOLIS© brand, which the cities in the pilot project enjoy. Other cities will progressively join this brand, enlarging and improving its content. This is a consequence of the research results, which have been presented to the different agents involved.

The main phases of this research consist of the following studies:

- The SWOT analysis, which shows that the management of intangibles is of crucial importance in the development of the cities in the network. Specific projects should deal with key dimensions related to success factors and the strategic axes of the KOGNOPOLIS© project.
- The study of the management of intangibles in the organizations of the network, which reveals that there is a strong tendency in each entity to establish preferential relations with other entities related to their area of influence and so make it more difficult to establish relations with entities in other regions.

“The appearance of a culture of networking implied a significant incorporation of new knowledge and abilities.”

To summarize, we can conclude that the pathway for learning and regional dynamism in this case study, following the logic of the knowledge society, has been clearly drawn. The institutions for carrying out this learning process have been identified and suitable instruments created.

Notes

1. The author expresses his appreciation for the funding of the KOGNOPOLIS® project (INTERREG IIIA SP4/E43), which was co-financed by the European Fund for Regional Development (EFRD) and the University of Extremadura (Uex).
2. In the annual report of the financial entity La Caixa in relation to socio-economic indicators of Spanish municipalities.

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