REPORT

STRATEGIC INTELLIGENCE
AND
CLUSTER BUILDING

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URENIO Research Unit
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A. THEORETICAL APPROACH AND KNOWLEDGE INFORMATION SYSTEMS FOR STRATEGIC INTELLIGENCE AND CLUSTERS

Introduction

A main question arising about the impact of strategic intelligence on clusters and the relation between them is whether the nature of business intelligence and strategies differ if they apply to a company working for his one or to a mix of networking companies forming a cluster.

Principal element for companies working together is the collective nature of their business. In this framework, strategic intelligence of clusters should also obtain a collective character, i.e. a collective procedure for the required strategic information, a collective articulation of the demand for new technologies, a collective nature for learning process, a collective nature for knowledge acquisition and generation, and so on.

The functioning and organisation of this collective economy, or associational economy, is closely tied with the forming of an intelligent environment, and more pricisly an intelligent region, that fosters collective capabilities and intelligence of actors, through diffusing information, flowing of knowledge, enhancing linkages, promoting feedback and interactive processes, or organising R&D and supply networks.

More explicitly, the main aspects of an intelligent environment are its capability of circulation, dissemination and diffusion of technology and information, the establishment of diverse forms of relations, links and feedback among actors, and the building of collaboration networks and multiple forms of interaction between different elements related to a process. The interactive process is of prime importance for the promotion of collective intelligence. This happens, because interaction through various forms of cooperation and networks activates learning processes, which in their turn activate the generation and acquisition of new knowledge. The learning process takes the form of a collective process when occurs from inter-firm co-operations in different forms of joint activities, or from co-operations between firms and research centres, universities, technology transfer organisations or business associations. A significant outcome of a system of collaboration is the sharing and articulation of tacit and/or codified knowledge, and the transfer of information, technology and labour both between firms and between public and private agencies. This collective sharing, articulation and transfer of knowledge among the actors involved in different activities constitutes the basis for the operation of the interactive learning process.

In this sense, the building of clusters' intelligence, which results from co-operations, collaborations and interactions is closely linked with the above process and for that mater, acquisition of knowledge and formation of strategies, including strategic intelligence, are different in nature than firms working in isolation. In the following sessions, first, the specific aspects of clusters, their strategy and the networking society are pointed out. Next, the meaning of the strategic intelligence related to clusters is attempted to be define. Finally, the role of knowledge information systems in building the intelligence of clusters is pointed out and a case study of the implementation of a knowledge information system is descripted.

Clusters and the networking environment

The definition of a cluster should departs from the concept of agglomerations in that the knowledge interactions within the cluster are not random but rather deliberate, socially constructed and determinant for its competitive survival. According to Marshall, localized economies in geographic agglomerations have three key explanations. First, firms get close together geographically because this allows them to develop a pool of specialized labour that is highly skilled for the specific needs of an industry and relatively easy for the firms in need of these skills to access. Second, these firms can provide non traded input specific to an industry, i.e. by localizing themselves in close geographic proximity, the firms can experience economies of scale in developing and using common technologies or a particular capital infrastructure. Third, firm that join together geographically can generate a maximum flow of information and ideas. In other words, product, market and technological knowledge can be more easily shared and more effectively turned into valuable innovations between agents that are in close geographic proximity than between agents that are more geographically dispersed.

The definition of industrial clusters stresses the notion that the members of such a cluster are localized in close proximity within a particular geographic region. In that way, industrial clusters can develop internal economies of scale in terms of specific trading links and customer–supplier relationships and innovative firms can be heavily dependent on local networking or linkages to support their novel products and services. The knowledge-based advantages generated within an industrial cluster stem from both the number and the nature of the particular linkages between its members. In a well-developed industrial cluster, these linkages can be numerous, unique and specialized to the industrial cluster, including:
—common customers (both firms and individuals)
—common suppliers and service providers
—common infrastructure such as transportation, communications and utilities
—common pool of human talent such as skilled professionals or specialized labor
—common educational, training and coaching facilities and approaches for workers
—common university, research centres and technology institute specializations
—common risk capital markets

Members of an industrial cluster must share and nurture a common stock of product, technology and organizational knowledge and a common access to important resources and information. Well-functioning industrial clusters have typically developed a clear, common stock of organizational knowledge that is shared by all members, across functional, cultural and .firm-specific boundaries. These include strong socio-cultural ties among the local economic agents, creating a common code of behaviour that facilitates trust and active collaboration; a common language on technological, business and organizational terminology; a common industrial culture and atmosphere; a common philosophy and approach to developing human talent and specialized labour; a common business understanding of the basic competitive dynamics of their industry; and common approaches to competitive performance measurement, Communication interactions that support the development of a common sense of identity in industrial clusters include proactive industry associations, common interest groups to lobby local or national governments and building a common image through public relations initiatives. Typical communication approaches that foster a common sense of identity among the members of an industrial cluster vis-a-vis the outside world include developing a common product- or quality brand, as well as common and explicit quality standards. Finally, knowledge interactions and cross-firms mobility of skills and professionals are key elements for well-functioning industrial clusters.

An industrial cluster is a socioeconomic entity characterized by a social community of people and a population of economic agents localized in close proximity in a specific geographic region. Within an industrial cluster, a significant part of both the social community and the economic agents work together in economically linked activities, sharing and nurturing a common stock of product, technology and organizational knowledge in order to generate superior products and services in the marketplace.

The nature, quality and strength of a cluster’s underlying social fabric determine how it integrates existing and new knowledge in order to create superior products and services. In essence, this is what differentiates industrial clusters from simple geographic agglomerations of economic agents. The strength of an industrial cluster’s relationships is the level of embeddedness of the social network, in the sense that these depend upon norms, institutions and sets of assumptions shared among a group of actors and are not, in themselves, simply the outcome of economic decisions. Industrial clusters (whether spatial or not) differ from the agglomeration model in that there is a belief that such clusters reflect not simply economic responses to the pattern of available opportunities and complementarities, but also an unusual level of embeddedness and social integration. In an industrial cluster knowledge integration between firms as well as institutionalized trust and personal interactions between economic agents are especially strong.

The distinction between clusters stem from the degree to which the economic agents in an industrial cluster decide to engage in purposeful collaboration and continuous cooperation across critical activities that are of common interest to all—while keeping the competitive market dynamics intact. Simultaneous cooperation and competition in a clearly defined geographic area in turn requires a highly developed social fabric that engages and facilitates the integration of knowledge and communication exchanges as well as the fostering of a common sense of identity among economic agents. As a result the degree of knowledge integration that can be found developing in industrial clusters can be rather complex. The way in which an industrial cluster manage to orchestrate mutual cooperation, while at the same time fostering greater competition, might become crucial to the cluster's long-term economic survival.

Industrial clusters include a close-knit social community of people and a broad set of economic agents, not just firms. These economic agents comprise institutions such as universities, research centres, industry associations and technological institutes, which foster mutual economic cooperation and the sharing of technological knowledge among the members of an industrial cluster. These kinds of institutions have been referred to as comprising an "associational economy".

The associational economy is taking place more and more in complex networks, in which success and failure are strongly associated with the ability of all parties concerned to form strategic alliances and to mobilise the creative potential of users.

Other laws apply in this 'network society' or 'knowledge economy'. More and more often do we see the main goal being the optimisation of chains or systems of organisations, rather than a maximisation of the performance of components (e.g., companies). In terms of performance, organisations, and thus companies too, are constantly made more dependent on the performance of other organisations (also their competitors) within the networks in which they are active.

Main focuses of the strategic management are:

- The building of strongly-linked systems with fuzzy components
- The growth of (horizontal) network management
- The optimisation of chains and systems, instead of the components
- The growing importance of the interface between organisations and the networks within which they operate
- The forming of strategic alliances
- The institutional arrangements that facilitate horizontal policy

In the network society innovating in chains, networks and systems becomes more and more important. This provides firms with many new questions at strategic, conceptual and operational levels. How to handle intellectual property rights, how to strike the balance between competition and cooperation, what are the implications for the 'corporate culture' of the far more porous character of the firm, are only a few of the many questions here. In this context also the role of (knowledge) intermediaries, for instance knowledge intensive business services, in innovation processes is at stake.

Strategic intelligence and clusters

Strategic intelligence is an integrated part of Business Intelligence. As BI, it is a systematic process that collects, analyzes and organises the flow of critical information, focusing it on important strategic and operational issues, including competitors, new technologies, public policy and market forces. It must also be need-driven.

The BI cycle in general starts with planning based on corporate needs, then collecting reliable information from valid sources, then analyzing the data to form intelligence in conjunction with strategic planning and market research. Finally, if the intelligence is to have value, it must be disseminated in a form that is clear and understandable. Strategic intelligence role is to define those sources and to adapt information to corporate needs in order to foster intelligence.

The strength of a cluster depends on a series of interacting factors and especially to knowledge-based factors and strategies. In a cluster, networking of knowledge based elements can result in important advantages, such as inter-firm knowledge sharing advantages, inter-firm technology transfer advantages, shared market intelligence advantages and product- technology- managerial intelligence advantages. Strategic intelligence as a strategy that searches to define ways and combine different forms of knowledge and information acquisition for enhancing foresight capacity is a crucial element for both the scope of activities carried out by a cluster and for the learning and knowledge creation of the cluster.

Knowledge database and communication systems with distribution capability are invaluable tools for Business Intelligence. The BI process was working long before the development of the computer and knowledge database software, but those tools have allowed BI to have much greater value in the decision-making process. However, the information system must be current, timely, and accurate to have real value. We must note that many communication systems can provide solid information but not always intelligence.

Knowledge information systems and the building of clusters' intelligence

The genesis of the network society demands a new role for government and other players involved in the business processes. The growing importance of users in these processes and the network character of innovation demand new concepts. As a result, the policies of most OECD governments shifted over the last two decades from supply-oriented (production of knowledge), via diffusion-oriented, towards far more user/demand-oriented policies. This will demand the development of concepts, methods, techniques and instruments that will enable players to fulfil their new roles.

Major changes in the knowledge infrastructure and transfer occur. Because of the strong relation between the production and the application of knowledge, the emergence of knowledge-intensive services (engineering firms, software houses and consultant offices), the management of the knowledge infrastructure, the social distribution of knowledge and strategies for promoting intelligence are crucial aspects.

The network society places high demands on the management of the interface between organisations and the networks within which they operate, on strategic alliances, on the ability to mobilise and use the creative potential of the players concerned, on the flexibility of institutions and systems, and on institutional arrangements that facilitate horizontal policy and collaboration.

There is a great need for policy concepts and instruments that promote flexibility and make a direct contribution towards the reinforcement of networks, and effectively integrate the public knowledge into networking activities. The concept of cluster policy that receives a lot of attention from policy makers is a good initial step in this direction, but many more steps will have to follow. One important component of this set of instruments consists of instruments that help to eliminate many barriers between the players in networks. There have been many new developments underway in this field over the past few decades. Strategic workshops, scenario workshops, electronic boardroom systems, and gaming and consensus development conferences are only a few of the many examples.

Without doubt, ICT is a significant factor in the transformation of this 'strategy and management paradigm. It is thanks to ICT that information is becoming more rapidly accessible to an ever-wider public. This leads to the breaking down of information monopolies, and the rapid and efficient exchange of information—a precondition for operating in networks—becoming possible. Flexibility and the ability to eliminate (institutional) barriers and to stimulate initiatives that promote interaction between organisations and the networks within which they operate become crucial characteristics of the players involved in innovation processes.

Virtual communication technologies and developments in global transportation and logistics during the 20th century have made localization economies more critical to the competitive performance of firms. On the one hand, virtual communications and similar technologies have highlighted tacit knowledge and close personal relationships between economic agents as key determinants for the competitive success of firms. On the other hand, global logistics mean that access to basic production factors such as capital and non specialized labour are largely open to all, whereas flows of specialized knowledge and rich knowledge interactions that lead to valuable innovations remain stronger between agents in the same spatial group than among geographically dispersed firms.

Case study of the implementation of a knowledge information system

THE BUSINESS INTELLIGENCE WEB: AN INTEGRATED APPROACH TO KNOWLEDGE MANAGEMENT http://iwi2.unisg.ch

In the following pages is described the architecture and functionality of a novel platform for the management of corporate knowledge. The system present uses Internet technology to access and integrate distributed information sources within an enterprise network. Furthermore, weakly structured processes, which are based on such sources, are supported.

Business Process Redesign has brought an improved customer orientation and increased efficiency in many companies, especially when combined with packaged software like SAP R/3. A closer look at the types of processes that were redesigned in these projects shows them mostly to be transaction-oriented processes, i.e. highly structured processes based on highly structured data. On the other hand, knowledge-oriented processes, which are weakly structured and based on less easily identified information sets, are usually not taken into account. The reasons are manifold and include the complex modelling of such processes and the general problem of integrating heterogeneous information systems and their data.

Intranets provide a novel and popular approach to this problem, these are local networks and services based on widespread Internet protocols, which are in use in various industries. This simple and proven network technology allows for the inexpensive integration of various legacy systems and data sources. Successful Intranet projects in recent years have demonstrated that significant efficiency improvements are achievable for processes that are not covered by conventional standard software. At the same time, it has become obvious that standardised toolsets for Knowledge Management with Intranets and a unified methodology for their implementation and customization is still missing. Furthermore, present Intranets are mostly limited to providing services such as e-mail and search engines but not to support knowledge-oriented processes.

For that reason, the Institute for Information Management is currently working on a project called the "Business Intelligence Web (BIW)", which is part of the Information Management research program at the University of St. Gallen. Its goal is to fill the gap between knowledge-oriented processes on one hand and standard business software on the other hand in order to allow for easy and rapid implementations of KM solutions.

This project pursues the following objectives:
- Compilation of a complete toolset that takes into account various aspects of Knowledge Management.
- Design of a standardised and flexibly configurable user interface to support knowledge-oriented processes.
- Conception of integration mechanisms for heterogeneous knowledge sources.
- Development of a methodology for the implementation of enterprise-wide and/or cross-enterprise Intranets for Knowledge Management, respectively.
- Design of reference processes.

In the following sections, are descript the technical aspects of the BIW.

Components of the BIW

Knowledge has become a critical resource in international competition but existing understanding of its management is still inadequate. Existing approaches mostly remain on the strategic or organisational level without considering the necessary support by information technology. Vice versa, several tools for the administration of knowledge have been developed, but their organisational embedding is usually insufficient.

The main objective of the Business Intelligence Web is the accomplishment of a strategic decision to introduce Knowledge Management on both the process and the IS level. For that purpose a methodology for modelling weakly structured processes and a collection of configurable reference processes is being developed. Furthermore, an Intranet-based architecture is being developed and extended by a standardised toolset.

Knowledge as a part of business processes. The standard software that was implemented during many BPR projects in the past generally led to more efficient and customer-friendly processes. These information systems primarily support transactions that access highly structured data. But the processing of knowledge, which is usually contained in documents, is an essential part of many business processes

The knowledge part of operational business processes, whose primary medium is paper, can principally be covered by integrated document management systems whereas support for weakly structured but processes is completely absent, e.g. the preparation of a meeting with customers. It is not sufficient to simply make relevant knowledge accessible to employees since the amount of data is larger than anyone can handle. Rather is it necessary to support them by an "intelligent assistant" during navigation through available knowledge bases depending on the context of a process. Thus an employee gets an individual view of internal and external knowledge and the activities of a process get associated with suitable subsets of such a view. Furthermore, it is necessary to emphasize that knowledge-oriented processes are not limited to the use of knowledge. The core processes of Knowledge Management also include the creation and distribution of knowledge. We distinguish the following kinds of core knowledge processes:
- Creation of new knowledge
- Preservation of new and existing knowledge
- Knowledge distribution
- Linkage of available knowledge

Integration of knowledge sources and systems

The most important step during the technical realization of the BIW is the integration of several heterogeneous data sources and information systems. Three categories of integration can be distinguished:

Presentation
Integration on the presentation layer requires an Internet-compatible user interface for the respective system which can be linked from other hypertext pages where necessary. Existing host-based systems can also be integrated using applets that emulate various terminal protocols.

Application
Integration on the application layer requires an API that allows for function calls to the respective application. Several standard software packages offer such APIs and several toolkits exist for extensions of legacy systems. Furthermore, parts of the user interface must be converted to HTML, Java, etc.

Data
Integration on the data layer means that data gets processed without using the appropriate application. This usually makes sense during read-only accesses of search operations on heterogeneous data sets. The Business Intelligence Web is based on a 3-Tier-Architecture.

External systems

The user needs an internet browser that serves as a universal client to any external system. Applets are embedded in the web pages of the BIW and support the user throughout knowledge-oriented processes and navigation through the corporate knowledge base. External systems might be standard software packages, such as SAP R/3 that are already equipped with Internet-compatible user interfaces. Furthermore, legacy systems can be integrated by newly developed interfaces or emulations. Other external and internal information sources are made available directly by hyperlinks or indirectly by search engines. This includes Internet web sites, file servers for office documents, and Lotus Notes databases. It is the purpose of the BIW server to connect these two layers. This principally fulfils the following functionality:

User Administration
Every user gets an individual homepage with links to customized information sources and applets for the respective knowledge sources.

Knowledge Administration
The BIW contains meta-information on all existing knowledge sources, their structure, the respective application type and suitable interfaces. Generic interfaces (so-called Translators/Wrappers) are available for all application types that allow for searches on the information base.

Semantic Integration
The user should be independent from the associated application when searching documents and databases. For that purpose, heterogeneous data sets are organized depending on their contents and made available through a search form. Such forms offer an intelligent search function for the entire data as well as options to select particular application types. Thus the BIW serves as a simple Mediator.

Knowledge Distribution
Besides active searches for information, the user also periodically receives individualized information packages ("Notifiers"). One suitable tool is an In house Publishing application for

centralized distribution of documents. Documents are published and assigned to one or more channels. Users can subscribe to these channels and get information on new documents or updates, e.g. by e-mail. Every user is assigned to one of the following three roles: Reader (read-only access), Editor (read/write access) or Manager (read/write access and channel administration).

Knowledge tools

Besides organisational measures, computer networks and tools for the analysis and communication of information are another important condition for effective knowledge processing. The compatibility and integration of current information technology is still at its beginning so that efficient Knowledge Distribution does not make much sense without a suitable technical infrastructure. Intranet technology offers an inexpensive and relatively simple approach for the integration of heterogeneous information systems.

Numerous manufacturers of standard business software already sell Internet compatible versions of their products that can be operated using a common Internet browser. The functionality of such applications usually differs only slightly from the original version except a few Internet-specific features, such as electronic product catalogues.

The objective of an intranet ought not the replacement of all existing information systems by intranet applications. It is rather necessary to integrate legacy systems by intranets and to supplement them by special Knowledge Management tools. Thus, the intranet serves the purpose of a metaplatform that can be used to build up individual, customized information systems out of existing applications and knowledge sources.
Knowledge Management Tools can be divided into various categories:

Search Engines
A popular service for the management of the information flood in the Internet is provided the several search engines. Some of them are also available for corporate use and search various document formats as well as databases.

Data Warehouses
Contrary to other Knowledge Management Tools, Data Warehouses specialize on highly structured quantitative information. Their task is the integration and aggregation of heterogeneous data, which allows for several analysis methods (e.g. OLAP).

Document Management Systems, Digital Archives
DMS and digital archives enable enterprise-wide digital administration of texts and images. In order to associate documents with the respective business processes, most systems offer the option to be integrated with MSOffice, SAP and other standard software.

E-mail, News, Push-Technology
The classical Internet applications are e-mail and newsgroups. Some current Internet suites also include push clients, which periodically search news channels, i.e. internal or external web pages that contain news about certain topics as well as information about recent updates. Groupware systems such as Lotus Notes usually cover parts of the enumerated functionalities and often include specialized development kits for extensions. On the other hand, the integration capabilities of such systems are often very limited, which forces many manufacturers to adapt to Internet standards.

Combining knowledge and processes

Supporting everyday activities of knowledge workers takes more than just access to information and systems. It is necessary to offer task-oriented links to knowledge, no matter where it is physically stored. We propose customizable assistants that guide the user through all activities of a certain process and show relevant information sources.

The Business Intelligence Web uses a browser-based user interface. After the user logs on, the BIW-Server generates an individual homepage for the user that contains links to various standard tools such as e-mail, discussion groups and search engines as well as a collection of external information systems. Furthermore, the user gets an overview of new events from all relevant information sources. Recent mails, news, dates and current tasks are organized in a list that contains direct links to the respective documents.

Individual Homepage

On the left side of the screen a set of functions are made available. The user can configure information sources to be searched and choose the necessary knowledge tools. Electronic assistants can be started that support knowledge oriented processes and know all the necessary activities. Activities and their relationships are controlled by the assistant. A list of associated knowledge sources is displayed.

Process Assistant

Moreover, active processes can be extended flexibly by additional activities and knowledge sources. New configurations can be saved and reused as well as forwarded to other people. The access to knowledge sources takes place within the browser window. All user actions are recorded in order to allow for reports on processes in the future. An overview is provided of all active processes retrieved as well as a configurable list of potential knowledge sources.

Conclusion

In the previous paragraphs, we described the structure and the functionality of the Business Intelligence Web, Intranet-based software for corporate Knowledge Management, as well as the underlying concepts for the support of knowledge-oriented processes and the integration of heterogeneous knowledge sources. As we have demonstrated, Internet technology can act as a simple but universal integration technology.

The system provides fast, structured and individualized communication of knowledge on customers, markets, technologies, products, and processes. The focus is on knowledge-oriented processes, i.e. weakly structured processes that are only partially support by conventional standard software. The benefits for the user include:

- cost reductions compared to classical media
- up-to-date internal and external information
- enterprise- and employee-specific delivery of knowledge
- fast and inexpensive implementation using Intranet technology
- integration of existing systems

Future improvements will concentrate on knowledge identification and distribution. Learning user interests from their use of knowledge sources and single documents, for instance, could help generate a detailed user profile that might be used to provide more precise searches. Another approach is the use of agent systems that search for information independently from user interactions. Furthermore, a unified method for the design and implementation of a customized BIW must be developed.

B. RESULTS OF THE SURVEY OF THE NEEDS FOR STRATEGIC INTELLIGENCE ON THE COMPANIES OF THE ICT SECTOR IN THE REGION OF CENTRAL MACEDONIA

Introduction

Sample of the companies interviewed
In the Region of Central Macedonia, the total number of companies that were identified to be part of the ICT sector is 105. These companies are included in Appendix A.

From this list, 40 companies were initially selected for the construction of a first sample of the companies to be interrogated. Main criteria for the selection of these companies were the following:
The size: Have a sample in which different sizes of SMEs are included, from less of 10 employees to largest ones, of more than 100 employees.
The activity: Have companies that are activated in the production of both hardware and software and not only those with commercial activities. Companies that were activated only in commercial activities were excluded from the sample.

In all the 40 companies, a letter followed by the questionnaire was sent, which informed them about the project, the benefits arising from the initiative for them, the expected results, and invited them to be part of the hall initiative. Phone calls and e-mails followed, and 21 small to medium companies, forming the actual sample of the survey report, have corresponded. Additional 4-5 companies are intended to be interviewed in the following days for the accomplishment of the final report of the survey.

Methodology
The methodology applied for the survey was to perform personal interviews with the companies. The interviews were based on the proposed questionnaire of the lead partner, Region of Lorraine, despite the fact that URENIO had developed a different questionnaire for this survey. This was decided by the local working group of RCM, in order to have common results with the other partners for better analysis issues.

Interviews with the companies were performed by 3 specialist personnel on behalf of RCM – URENIO. The average time of interviews, was one and half hour (1 1/2 hour).

After the completion of the 21 questionnaires a model was developed so that the data could be elaborated in a quantification manner. The presentation of results that follows include bar charts, tables, and comments for each section of the questionnaire.

Company Information

The person who answered mainly the questionnaire was the director who in most of the companies was the main owner of the company.

A high degree education (University level) concerned only a small part of the directors and only 1 of them had a Phd degree. Also, an interesting point is that nearly none of them had ITC educational origin. The majority of directors are between 30 and 45 years old.

Oldest companies that are established before 1990 found to be six (6) in the sample. Most of the companies are established during the decade of 1990 (8). Youngest companies established after the year 2000 found to be 1/3 of the sample.

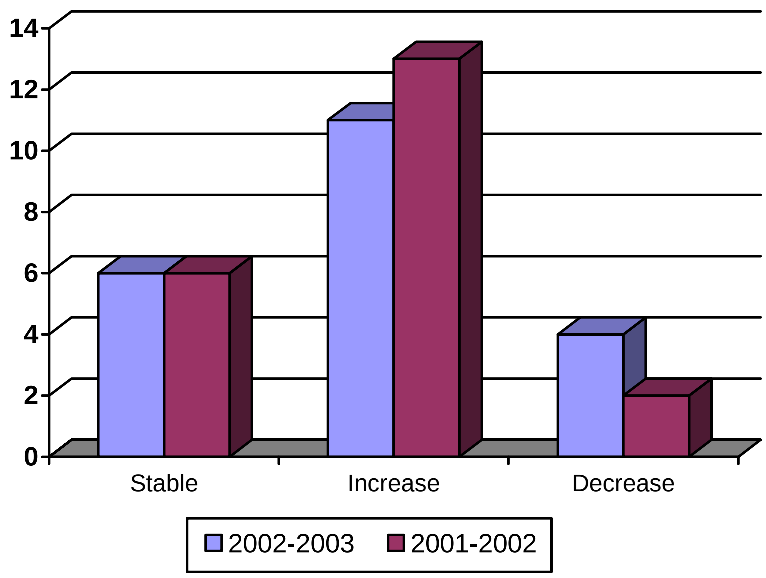
The main legal form of the companies is S.A. (12). From the sample three (3) of them are of L.t.d., four (4) of them are personal companies and one (1) is a non profit organization. Most of the companies (16) are working autonomously, i.e. are not a subsidiary of a group. Only one (1) is a subsidiary of a foreign company from Holland, and the rest of the subsidiaries belong to Hellenic companies.

Social Assessment

The companies' sales turnover ranges from 10230 Euros up to 86657147 Euros for the year 2003. Seven of them had sales up to one million Euros, eight of them had sales ranged from one million to16 million Euros. One of them has sales larger than 16 millions while five of them did not answer the question.

The trend of sales turnover according to the following table appears to be increasing between 2001 and 2003.

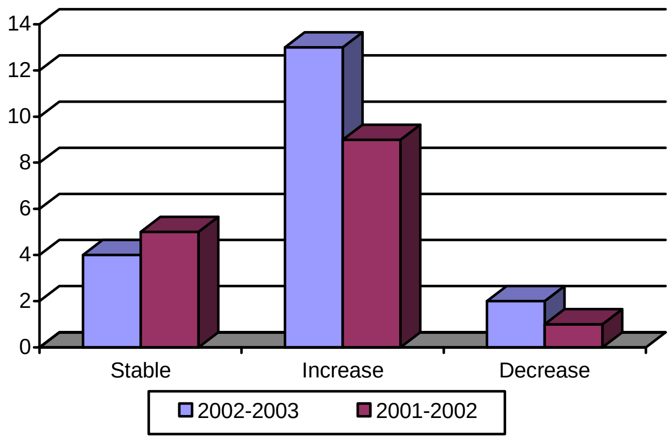
Sales Turnover		
	Number of companies	
	2002 - 2003	2001 - 2002
Stable	6	6
Increase	11	13
Decrease	4	2



The number of employees for the year 2003 ranges from 3 up to 122. Only one company is employing more than 100 employees. From the rest, half of the companies are very small employing up to 10 employees, while the other half are employing from 11 up to 100.

The trend of employees according to the following table appears to be increasing between 2001 and 2003.

Employees		
	Number of companies	
	2002-2003	2001-2002
Stable	4	5
Increase	13	9
Decrease	2	1



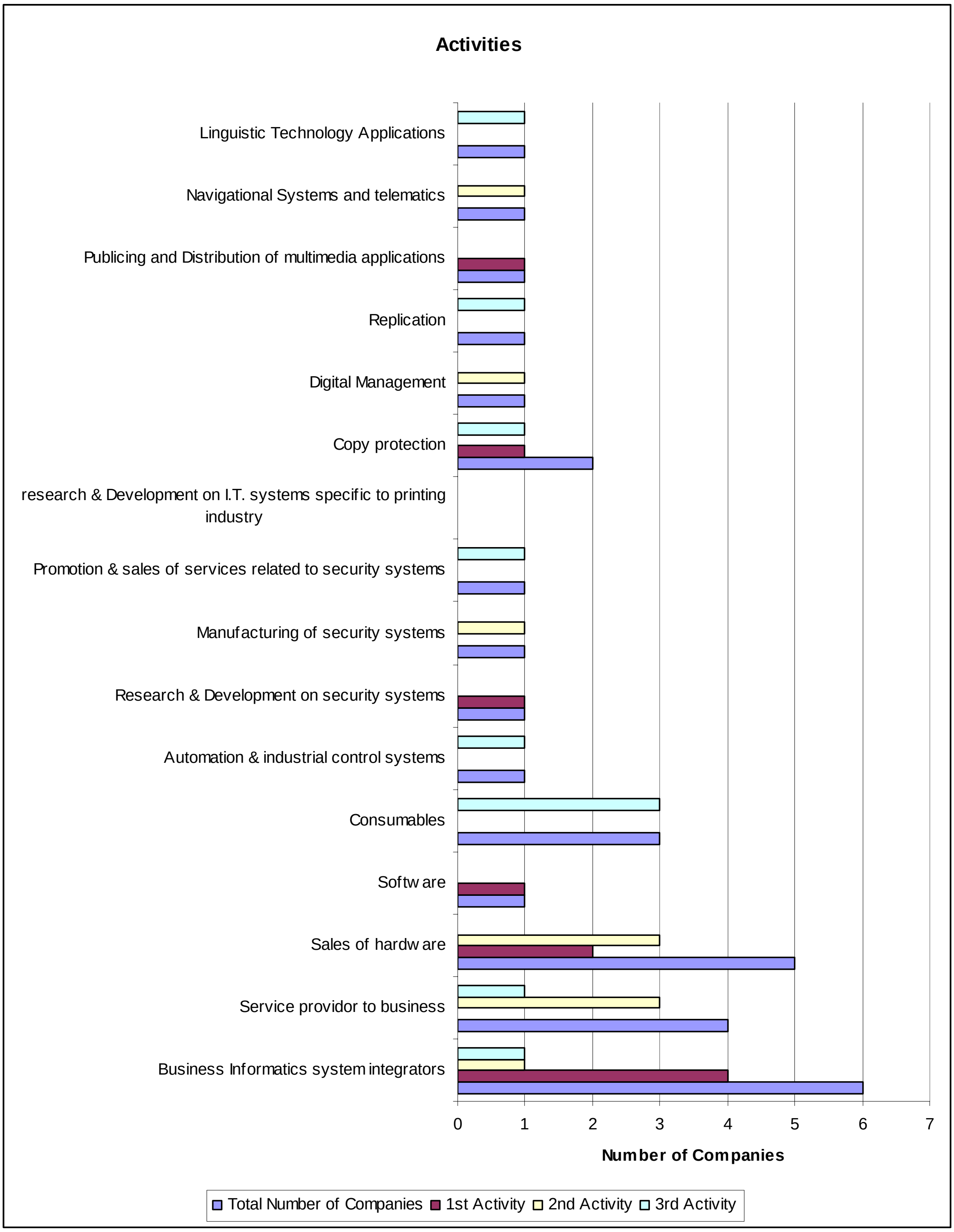
Activities of ICT Companies

None of the companies knew the NACE code of their activities. The main activities identified are related to business informatics and systems integrators, service providers to business and sales of hardware.

Subcontracting has not been identified to be in the main scope of the enterprises

Only two (2) companies are exporting.

Has not been identified interest for sub contractors of which clients are original equipment manufacturer (OEM)



Activity description	Total Number of Companies	1st Activity	2nd Activity	3rd Activity
Business Informatics system integrators	6	4	1	1
Service providor to business	4	0	3	1
Sales of hardware	5	2	3	0
Software	1	1	0	0
Consumables	3	0	0	3
Automation & industrial control systems	1	0	0	1
Research & Development on security systems	1	1	0	0
Manufacturing of security systems	1	0	1	0
Promotion & sales of services related to security systems	1	0	0	1

research & Development on I.T. systems specific to printing industry	0	0	0	0
Copy protection	2	1	0	1
Digital Management	1	0	1	0
Replication	1	0	0	1
Publishing and Distribution of multimedia applications	1	1	0	0
Navigational Systems and telematics	1	0	1	0
Linguistic Technology Applications	1	0	0	1

Company Management

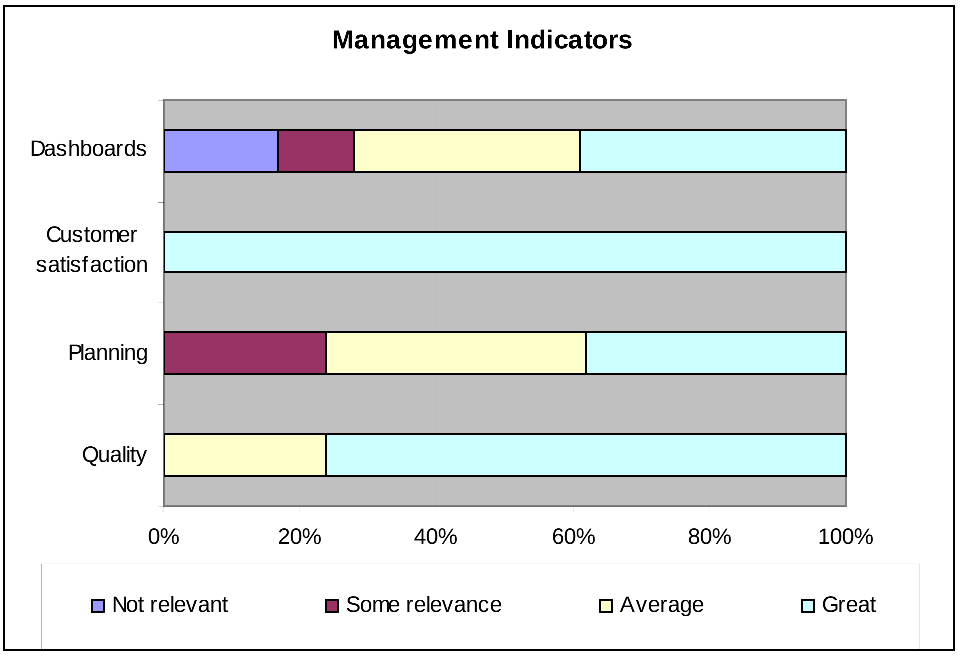
Although industrial properties are considered as very important, up to now very few of the companies do have any of them registered. A trend have been identified that they will start registering their industrial properties mainly in Hellenic Industrial Property Organization

The most important management indicators are 1) quality, 2) customer satisfaction. Although planning has been stated as important, appears to be only in short term. The second most important indicator is Customer satisfaction. Dashboards do exist but only for short term planning and monitoring

The organization structure of the sample mainly consisted of SMEs therefore the budget per department (% turnover) could not be answered by most of the enterprises. The administration department exists in most of the enterprises. Engineering and design plus software development department is included in most of them. Only 2 out of the 21 do have Information management department. The Marketing department is mainly outsourced. R&D Is performed by most of the SMEs but not by an organized department

Long life training considered as a very important issue but because mainly is performed internally only few the SMEs gave values for Budget (% Wage bill), No days / year / employee. The domains that were identified were relative to Operating Systems, Hardware, Networking, Marketing, Business processes. The main training subcontractors and organisms are large companies from the sector as Microsoft, SISCO, HP, Intel.

Concerning the employees education less than one percent have a Phd degree. Five percent of them have a Master degree. Thirty percent have University Degrees and fifty percent degree from Technological Institutes.



	Quality	Planning	Customer satisfaction	Dashboards
Not relevant	0	0	0	3
Some relevance	0	5	0	2
Average	5	8	0	6
Great	16	8	21	7

Company Strategy

The orientation of most of the companies appears to be the detection and conquest of new markets. The only way to advance their business goals is the improvement of the products quality. Exports are not considered as of great interest while the development of new products appears to be very interesting. Diversification does interest them but vertically. They are very interested for specialization

Only one of the companies answered the field of its status in Europe, none of them the field of Growth in Europe

Orientation	1st Activity			2nd Activity			3rd Activity		
Detection and conquest of new markets	16	0	0	7	0	0	11	0	0
Improvement of the products quality	3	8	0	8	4	0	1	3	0
Export	2	5	3	1	4	0	1	3	1
Development of new products	0	4	4	1	1	5	0	4	2
Diversification	0	0	3	0	3	2	1	3	4
Specialization	0	2	6	0	3	4	1	0	5
Other	0	0	0	0	0	0	0	0	0

Impulsion

The targets that are set up by the companies appear to be mainly short terms. Qualitative factors are considered the most important ones. Quantitative factors are set up by the companies, mainly in short term. The main reason that has been stated is that the ICT sector is very volatile therefore it is very difficult for them to set goals or targets. The pattern that is emerging by their answers is that they are market followers.

Impulsion	1 year	3 years	10 years
Quantitative	71,43%	42,86%	28,57%
Qualitative	80,95%	61,90%	38,10%
Markets	42,86%	42,86%	19,05%
Technologies	33,33%	33,33%	28,57%
Partnerships	47,62%	28,57%	23,81%
Other	4,76%	4,76%	0,00%

Competitors

The competitors mentioned were mainly either local or in Greece. Very few of them stated competitors in Europe or worldwide. The general sense is that they do know quite well their competitors

	Area			Europe		
Competitors	Activity 1	Activity 2	Activity 3	Activity 1	Activity 2	Activity 3
Alpha Informatics	1	0	1	0	0	0
Orosimo	1	0	0	0	0	0
Momentus	1	0	0	0	0	0
Logodata	1	0	0	0	0	0
Thinx	1	1	1	0	0	0
Computer Project	1	0	0	0	0	0
Plaisio	2	2	1	0	0	0
PC Systems	3	3	0	0	0	0
Control System	0	0	1	0	0	0
Univel	0	0	1	0	0	0
Menvier (UK)	0	0	0	0	1	0
Apollo	0	0	0	0	1	0
Legrand (Security Lights)	0	0	0	0	1	0
Pansystems	1	0	0	0	0	0
ACE Hellas	0	1	0	0	0	0
Intellectron	0	0	1	0	0	0
Vector Ltd	0	0	1	0	0	0
Macrovision (local representatives)	1	1	0	1	1	0
Factories direct	0	0	1	0	0	1
Conceptum	1	0	0	0	0	0
Kastaniotis	1	0	0	0	0	0
Compucon	0	1	0	0	0	0
AUTO Hellas	0	1	0	0	0	0
Institute for Language and Speech Processing	0	0	1	0	0	0
Korasidis	1	0	0	0	0	0
Quadriga	0	0	0	1	0	0
VDA	0	0	0	1	0	0
Lodgenet - USA	0	0	0	0	0	0
Electronic Commercial Centre of Eastern	1	0	0	0	0	0

Macedonia - Thrace						
LogicDis	2	0	0	0	0	0
Singular	4	1	1	0	0	0
SAP	0	0	0	1	0	0
Computer Life	1	0	0	0	0	0
Unisystem	1	0	0	0	0	0
Logismos	1	0	0	0	0	0
Zero One	1	1	0	0	0	0
Pouliadis & Associates	1	1	0	0	0	0
Exin	0	1	0	0	0	0
Digital Innovations	0	1	0	0	0	0
Mellow SA	1	0	0	0	0	0
Alpha Visual	1	0	0	0	0	0
Hit360	1	0	0	0	0	0
PHP Org	0	0	0	1	0	0
Apesoft	1	0	0	1	0	0
SUMMOUC	0	0	0	0	0	0
Microsoft	0	0	0	0	0	0
Altec	2	3	0	0	0	0
Info-Quest	1	1	0	0	0	0
Open Technology Systems	0	0	0	0	0	0
Quest	1	0	0	0	0	0
A.C.N.	1	0	0	0	0	0
Macedonian Peripherals	0	1	0	0	0	0
EvenSoft	1	0	0	1	0	0
Planit	1	0	0	1	0	0
Twenty Twenty	0	0	0	0	0	0

Constraints

The financial situation of the Greek market (cash flow problems) is considered as the most serious commercial constraint. The social constraints that were mentioned are 1) that the graduates from Academic institutes are not qualified for the real business world, 2) and that the Hellenic society is not equitant with Internet. The main local technical constraint that have been mentioned by most of the SMEs is telecommunication infrastructure i.e. very difficult to get fast Internet ADSL

Commercial

Volatile market no able for planning	4
Market maturity	2
Transportation in Europe	1
Euro/US Dollar Equity	1
Downturn of local tourist market	2
Money deficit	3
Bureaucracy	1
Competition of non profit orgs	1
Very low profit margin	2
Constant modifications in pricing from suppliers	1
High tax rate	1

Social

Personnel not like commuting 40 min driving	1
Graduates not available	2
Moral issues (i.e in Muslim Countries)	1
Deficit of information about Internet	2
Mentality of Greek Businessmen	2
The experience of employees in public organizations in handling technical issues	1
Lack of Skilled specialized professionals	1
Know how of wood product Manufacturers	1

Technical

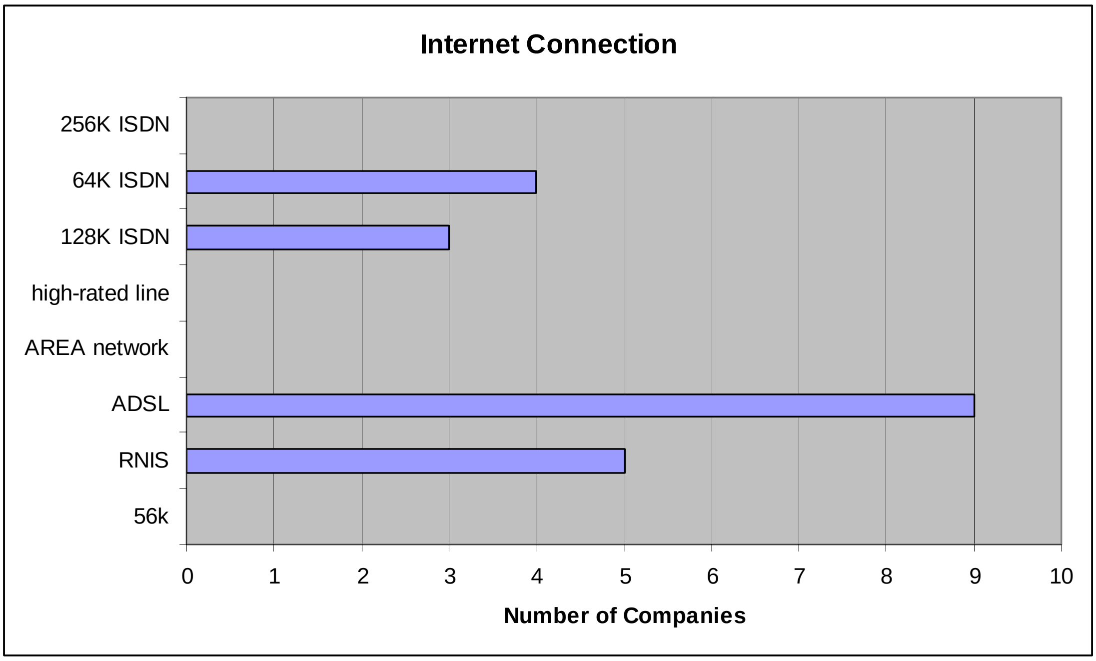
Telecommunication Infrastructure	7
Compatibilities	1
Cost of Infrustructure	1

Other

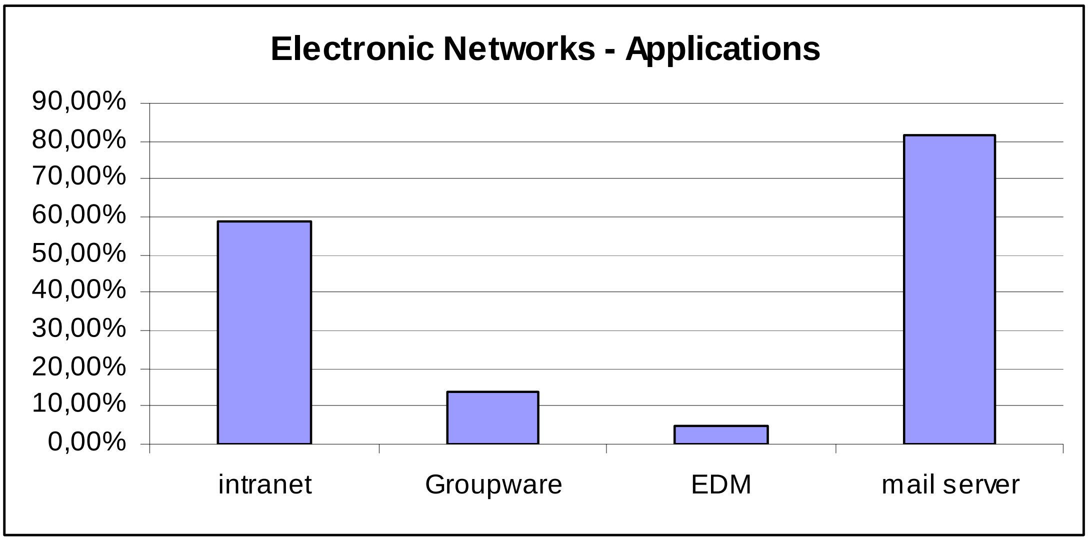
Language (Greek)	1

Electronic networks

The ICT companies are connected to Internet mainly through an ADSL connection. Most of the companies have their own LAN, intranet and mail server. According to the answers 1.22 personal computers are used per employee. The average mailboxes per employee is 1.14.



Applications that are used by the companies



Press Subscriptions

The main informative mean is considered to be INTERNET. Scientific and technical Publications very few of the companies considered themselves diligent readers. For the business press usually the companies are subscribers mainly to one. For regional daily press are diligent readers to at least one of them. For national and international daily press are diligent readers to at least one of them.

Innovation and watch

For the innovation section almost 1/3 of the SMEs mentioned examples of new products that have produced during the 5 last years. The most innovative process change was the adoption of ISO 9000/2000 quality manual by most of them.

The fields that the companies are considering most interesting to search in are 1) customers, 2) technologies, 3) markets and 4) products. An interesting point identified was that they are considering not relevant or of some relevance the field of financing and standards.

The sources of information that the companies consider relevant are their employees, customers and suppliers. The most relevant source of information is considered to be INTERNET.

More than half of companies declared that they have watch methodologies. In strict terms, though, very few of the SMEs do have a systematic watch methodology. Most of them they are applying not formalized or documented watch methodologies. The majority of companies do not have a research methodology for strategic information.

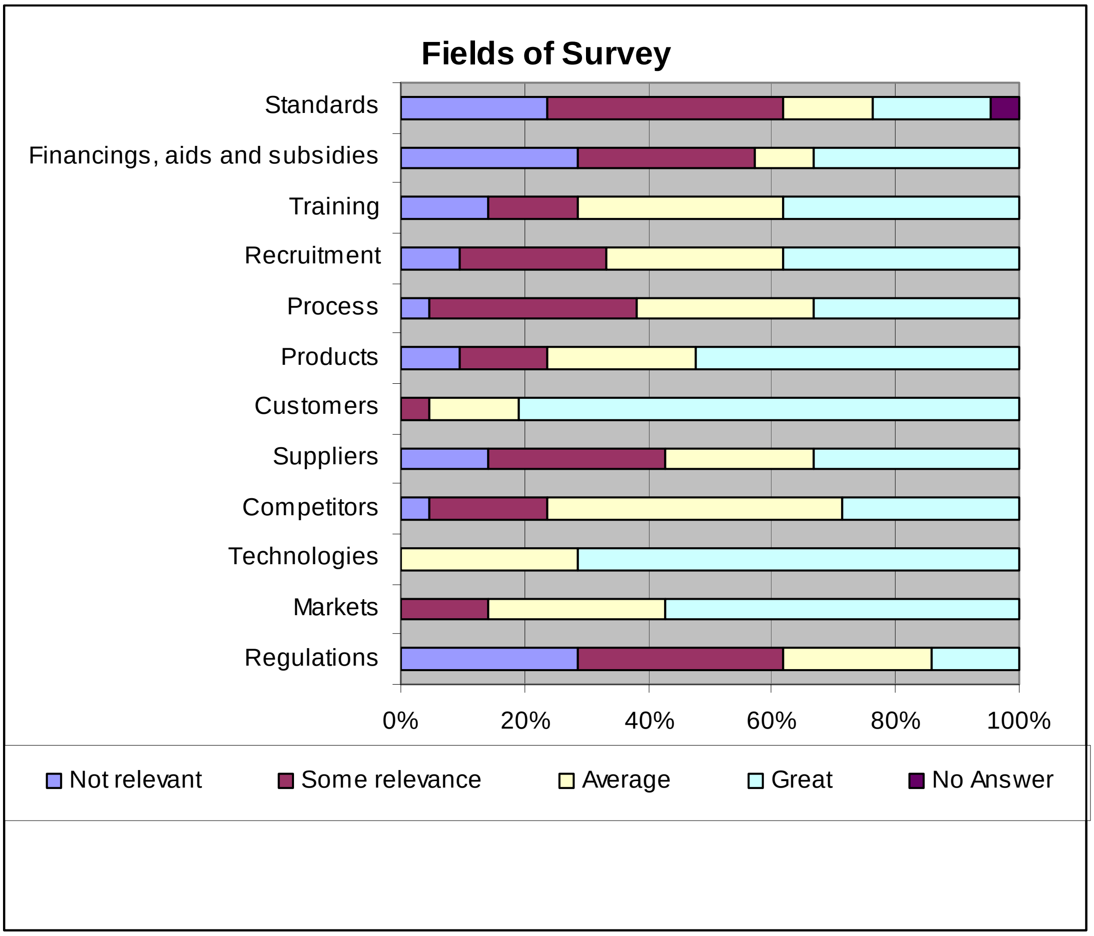
The tool of search for information is mainly INTERNET. The collected information is diffused through internal company meetings and e-mails. The tools that are used for management of information by the companies are ERP and CRM software systems.

Outsourcing is not used by the majority of companies. The most important factor that affects the satisfaction degree from outsourcing is the technical quality of the service, while the second of great relevance is the human quality of service.

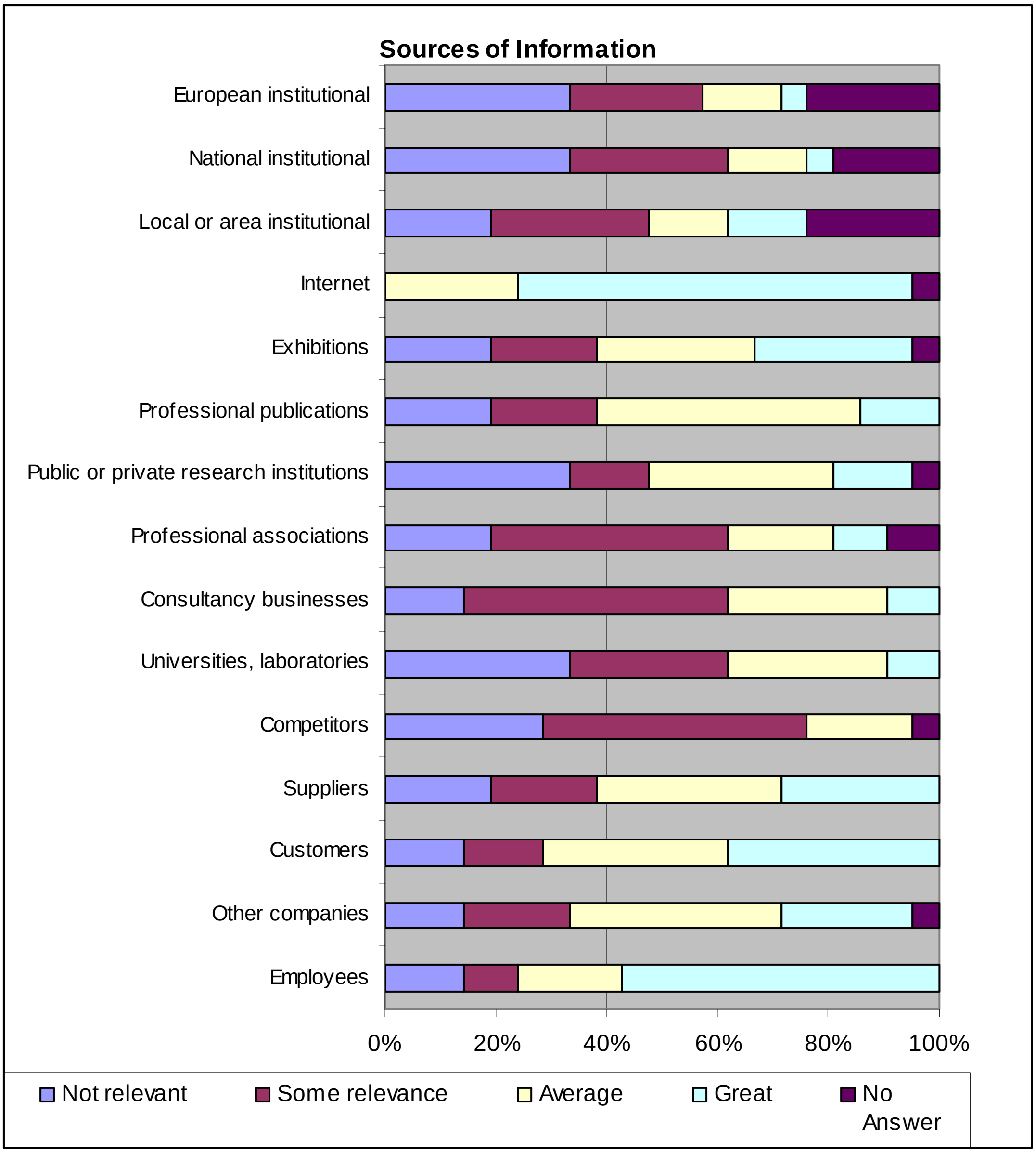
Most of the fields under watch are performed empirically. Customers and products are those fields which are formalized watched. The suppliers and regulations are fields of watch that are considered also important. The financing issues by most of them are watched by external to the company entities.

The survey identified as most important needs for watching, the fields of 1) the identification of the potential sources of information and 2) help with formulation in the requirements in information

Fields of survey	Not relevant	Some relevance	Average	Great	No Answer
Regulations	28,57%	33,33%	23,81%	14,29%	0,00%
Markets	0,00%	14,29%	28,57%	57,14%	0,00%
Technologies	0,00%	0,00%	28,57%	71,43%	0,00%
Competitors	4,76%	19,05%	47,62%	28,57%	0,00%
Suppliers	14,29%	28,57%	23,81%	33,33%	0,00%
Customers	0,00%	4,76%	14,29%	80,95%	0,00%
Products	9,52%	14,29%	23,81%	52,38%	0,00%
Process	4,76%	33,33%	28,57%	33,33%	0,00%
Recruitment	9,52%	23,81%	28,57%	38,10%	0,00%
Training	14,29%	14,29%	33,33%	38,10%	0,00%
Financings, aids and subsidies	28,57%	28,57%	9,52%	33,33%	0,00%
Standards	23,81%	38,10%	14,29%	19,05%	4,76%



Sources of information

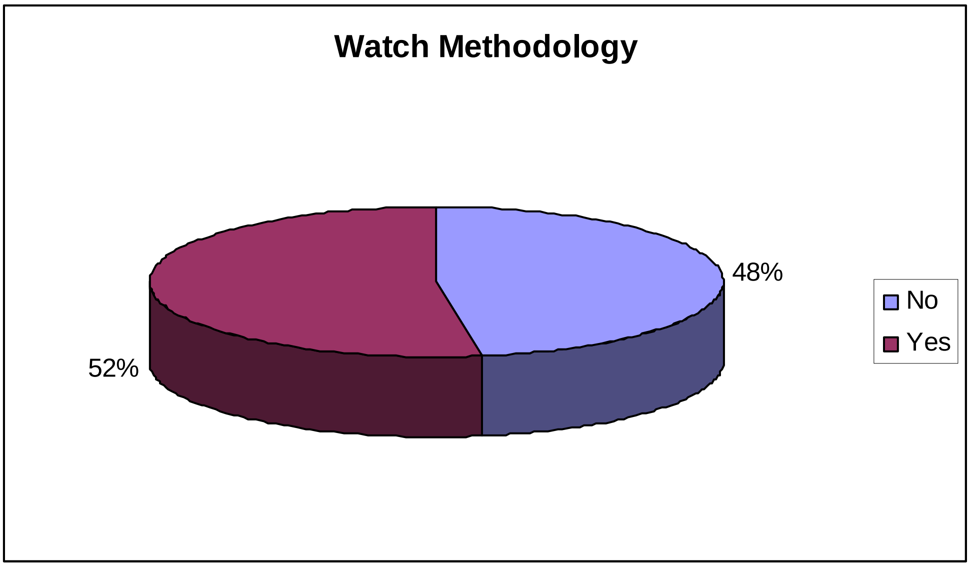


Sources of information	Not relevant	Some relevance	Average	Great	No Answer
Employees	14,29%	9,52%	19,05%	57,14%	0,00%
Other companies	14,29%	19,05%	38,10%	23,81%	4,76%
Customers	14,29%	14,29%	33,33%	38,10%	0,00%
Suppliers	19,05%	19,05%	33,33%	28,57%	0,00%
Competitors	28,57%	47,62%	19,05%	0,00%	4,76%
Universities, laboratories	33,33%	28,57%	28,57%	9,52%	0,00%
Consultancy businesses	14,29%	47,62%	28,57%	9,52%	0,00%
Professional associations	19,05%	42,86%	19,05%	9,52%	9,52%
Public or private research institutions	33,33%	14,29%	33,33%	14,29%	4,76%
Professional publications	19,05%	19,05%	47,62%	14,29%	0,00%
Exhibitions	19,05%	19,05%	28,57%	28,57%	4,76%
Internet	0,00%	0,00%	23,81%	71,43%	4,76%

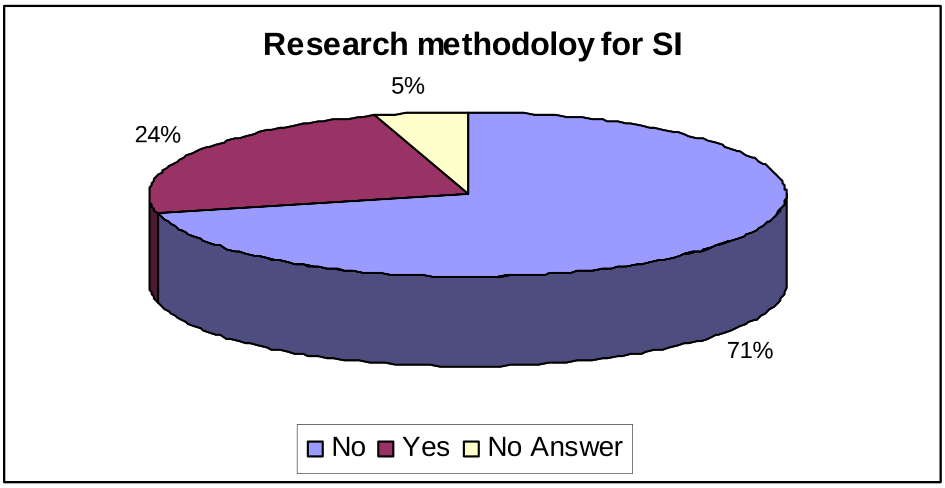
Local or area institutional	19,05%	28,57%	14,29%	14,29%	23,81%
National institutional	33,33%	28,57%	14,29%	4,76%	19,05%
European institutional	33,33%	23,81%	14,29%	4,76%	23,81%

Watch practice

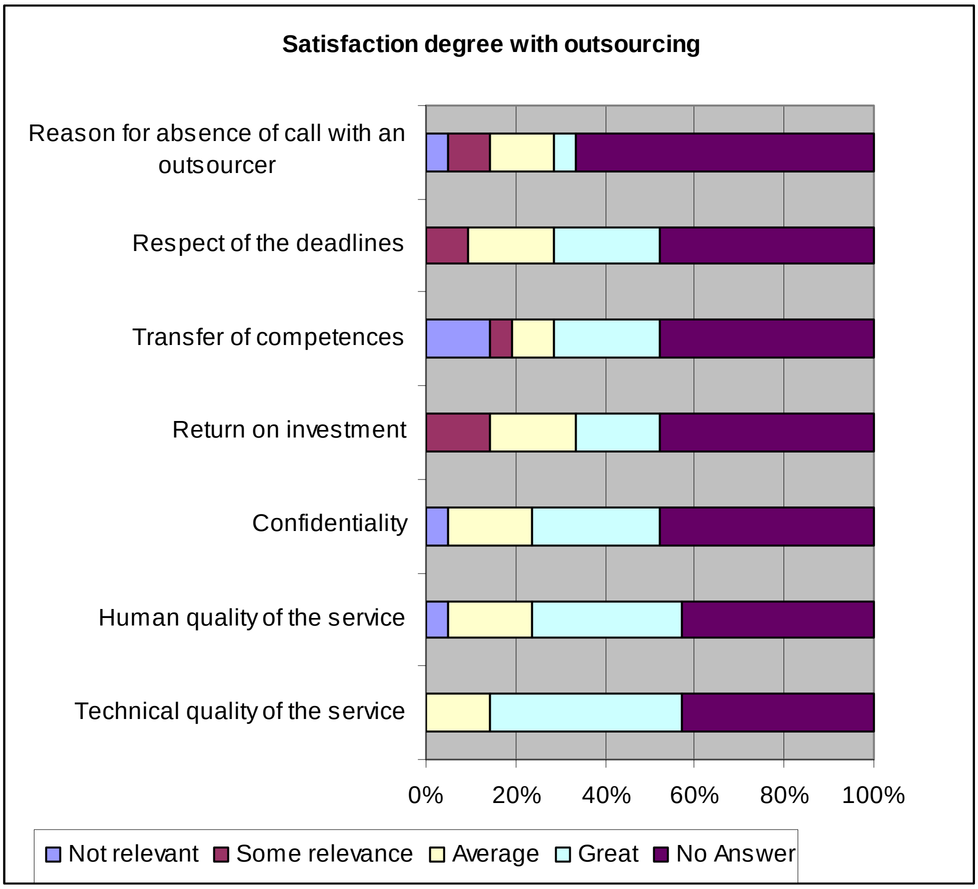
Watch Methodologies



Research methodology for SI

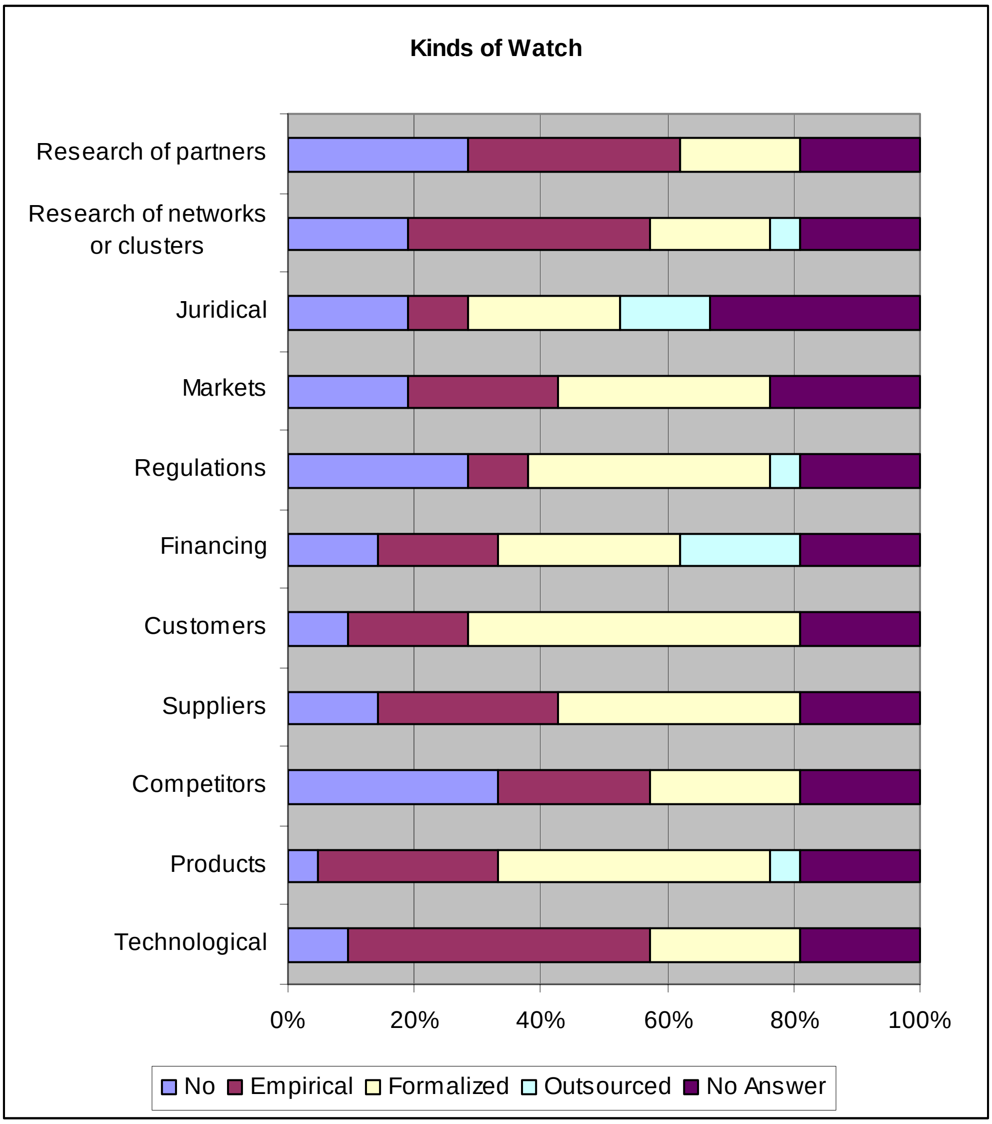


Satisfaction degree with outsourcing



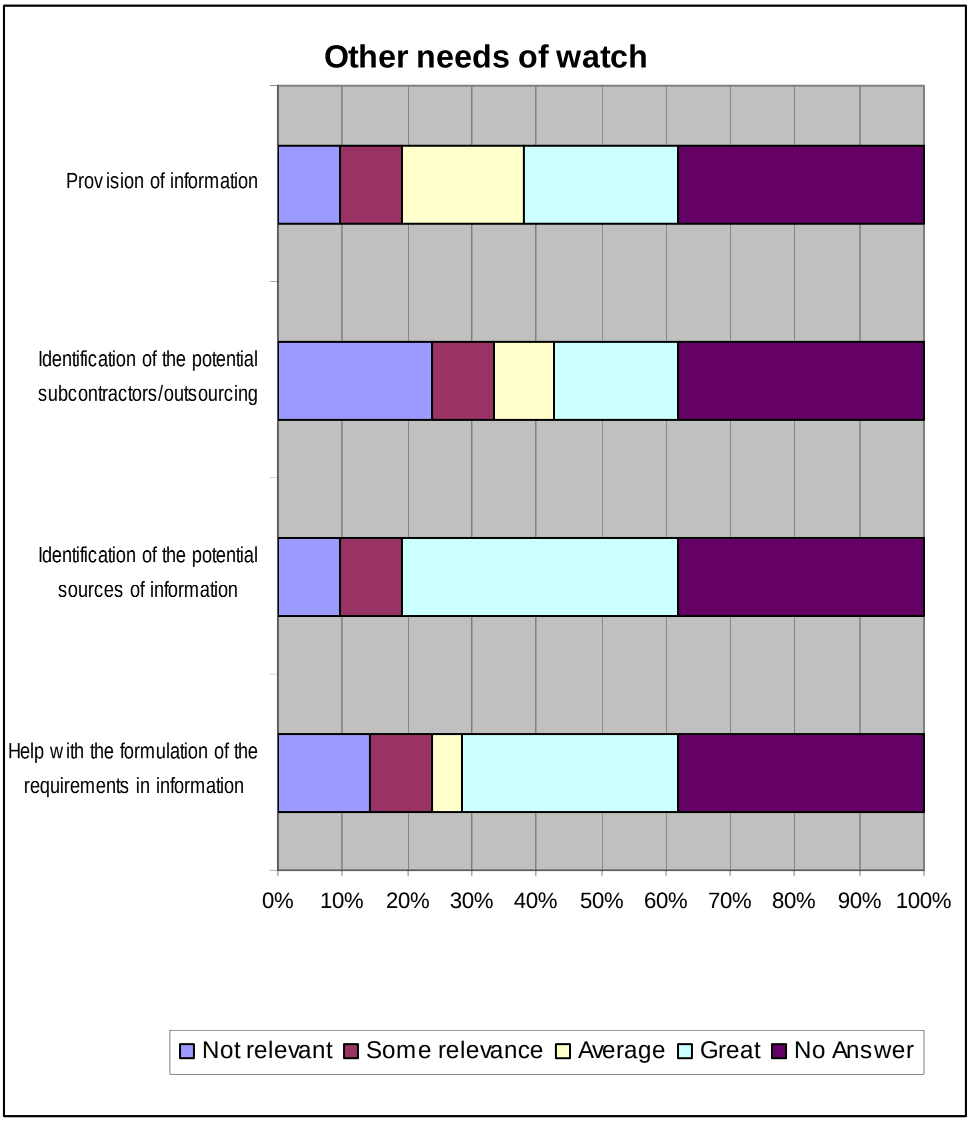
Satisfaction degree with outsourcing	Not relevant	Some relevance	Average	Great	No Answer
Technical quality of the service	0,00%	0,00%	14,29%	42,86%	42,86%
Human quality of the service	4,76%	0,00%	19,05%	33,33%	42,86%
Confidentiality	4,76%	0,00%	19,05%	28,57%	47,62%
Return on investment	0,00%	14,29%	19,05%	19,05%	47,62%
Transfer of competences	14,29%	4,76%	9,52%	23,81%	47,62%
Respect of the deadlines	0,00%	9,52%	19,05%	23,81%	47,62%
Reason for absence of call with an outsourcer	4,76%	9,52%	14,29%	4,76%	66,67%

Kinds of watch



Kinds of watch	No	Empirical	Formalized	Outsourced	No Answer
Technological	9,52%	47,62%	23,81%	0,00%	19,05%
Products	4,76%	28,57%	42,86%	4,76%	19,05%
Competitors	33,33%	23,81%	23,81%	0,00%	19,05%
Suppliers	14,29%	28,57%	38,10%	0,00%	19,05%
Customers	9,52%	19,05%	52,38%	0,00%	19,05%
Financing	14,29%	19,05%	28,57%	19,05%	19,05%
Regulations	28,57%	9,52%	38,10%	4,76%	19,05%
Markets	19,05%	23,81%	33,33%	0,00%	23,81%
Juridical	19,05%	9,52%	23,81%	14,29%	33,33%
Research of networks or clusters	19,05%	38,10%	19,05%	4,76%	19,05%
Research of partners	28,57%	33,33%	19,05%	0,00%	19,05%

Other needs of Watch



Other needs of watch	Not relevant	Some relevance	Average	Great	No Answer
Help with the formulation of the requirements in information	14,29%	9,52%	4,76%	33,33%	38,10%
Identification of the potential sources of information	9,52%	9,52%	0,00%	42,86%	38,10%
Identification of the potential subcontractors/outsourcing"	23,81%	9,52%	9,52%	19,05%	38,10%
Provision of information	9,52%	9,52%	19,05%	23,81%	38,10%

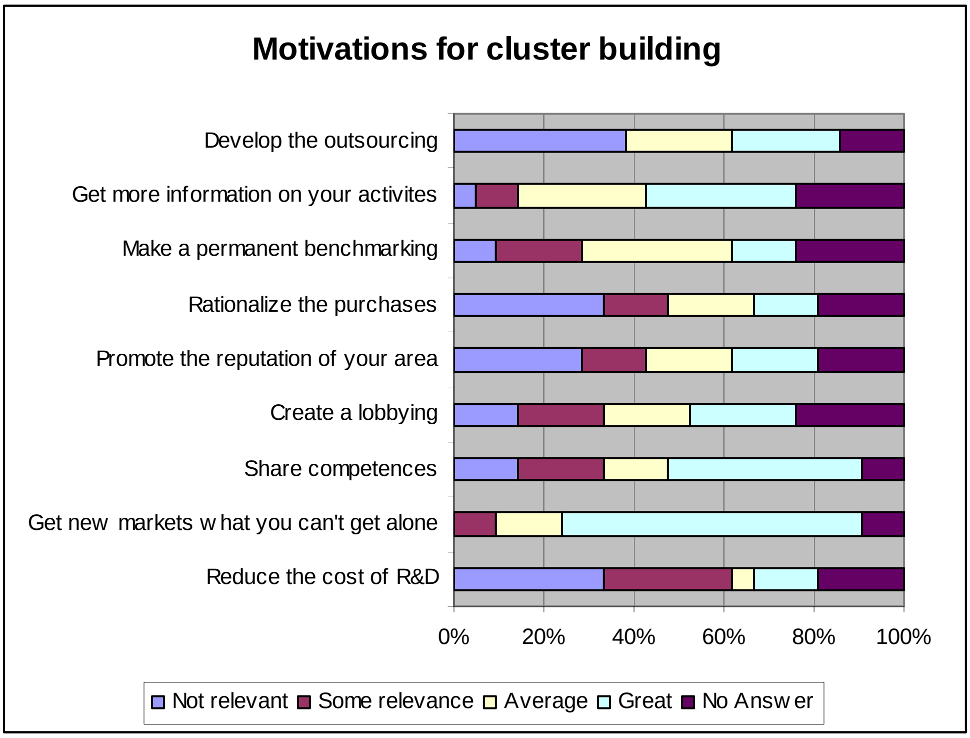
Networks

All the interviewed companies are participating in the Association of ICT companies in Northern Greece SEPVE and the Chamber of Commerce and Industry

Only two of the companies participate in a formal cluster

Most of the companies expressed their willingness to participate in a cluster. The reasons for participation in a cluster were 1) to get new markets (2/3 of them), 2) to share competences and 3) to get more information on their activities. None of the companies mentioned an organization that could be available to operate such a network. The Universities that could get involved were Aristotle University of Thessaloniki, University of Macedonia and University of Crete. It has not been identified a need for external support.

Motivations for cluster building



Motivations	Not relevant	Some relevance	Average	Great	No Answer
Reduce the cost of R&D	33,33%	28,57%	4,76%	14,29%	19,05%
Get new markets what you can't get alone	0,00%	9,52%	14,29%	66,67%	9,52%
Share competences	14,29%	19,05%	14,29%	42,86%	9,52%
Create a lobbying	14,29%	19,05%	19,05%	23,81%	23,81%
Promote the reputation of your area	28,57%	14,29%	19,05%	19,05%	19,05%
Rationalize the purchases	33,33%	14,29%	19,05%	14,29%	19,05%
Make a permanent benchmarking	9,52%	19,05%	33,33%	14,29%	23,81%
Get more information on your activities	4,76%	9,52%	28,57%	33,33%	23,81%
Develop the outsourcing	38,10%	0,00%	23,81%	23,81%	14,29%

C. CONCLUDING REMARKS

Survey results

From the survey of ICT companies in the region of Central Macedonia we can derive the following results.

(1) Profile of the companies

The majority of them are young companies, the 2/3 of them were established later than 1990. Their directors are young, aged between 30 and 45 years old.

They can be considered as dynamic companies, having more than half of them upwards trends both in sales turnover and employment.

Information communication technologies are key factors for globalization. Despite that fact, the companies of the sample are not exporting. That is why the only mentioned competitors were either local or national

The main activities of them are system integrators, and business informatics meaning that they have an intermediary role between companies and not oriented to end users. This intermediary role does not take the form of subcontracting with other companies, which is also expressed with their negative interest for subcontracting with OEM. Subcontracting is a key element for cluster building. So absence of subcontracting means that the business relations between them are not stable.

(2) Management issues

Quality is considered as the most important management issue.

Although very few of them do have registered intellectual properties, most of them are becoming aware of their importance and tend to do so.

Despite the very small size of the firms, engineering-design and software development departments do exist in most of them. Even that their organization structure does not contains a research and development department, R&D takes place intensively but not fully organized and structured. Marketing is a business function that is outsourced by most of them.

Information procurement methods are almost inexistence. This is verified by the absence of information management department.

Human resources are considered as very important capital to most of them. Not being able to find ready skilled employees from the market they are training them mainly internally. The training is based on a doing by doing process with no actual budget allocated to it.

(3) Strategy

Their strategic goals are set up only for short term. This identifies the fact that most of them do not have a clear and justifiable strategy. Strategy focuses mainly towards improvement of quality, exploration for new markets and ways to penetrate to them, vertical diversification, and specialization.

As it was mentioned above those strategic focuses are not methodologically derived and elaborated therefore it has not been able to identify the means and tactical targets to accomplish them.

(4) Constraints

The only technical constraint that has been identified as important is the supply of insufficient telecommunication infrastructure.

None social and environmental constraints appear to be of great importance.

Concerning commercial constraints few firms did mention the inability for market planning due to the volatile character of ICT market. The current status of Hellenic market in general is mentioned as another commercial constraint.

(5) Information – Watch

The main information source is considered to be Internet. Other sources of information are considered to be their employees, customers, exhibitions and suppliers.

The above result is the most important element of success of the STRATINC project. The proposed portal for strategic intelligence will tend to be the main information source of the firms, if it does actually satisfy their needs for information.

The fields that the companies are mainly watching are 1) customers, 2) technologies, 3) markets and 4) products.

The fields that have been identified as needed for watching are: 1) identification of potential sources of information, 2) help with the formulation of the requirements in information.

(6) Clusters

From all the facts and results mentioned above a mentality for cluster building can not be identified.

The links and feedback among actors, and the building of collaboration networks and multiple forms of interaction between different elements related to a process, as it is mentioned in Section A of this report are missing.

A collective procedure for the required strategic information, i.e. a collective articulation of the demand for new technologies, a collective nature for learning process, a collective nature for knowledge acquisition and generation, could create a collective mentality for cluster building.

STRATINC and needs of ICT companies in the Region of Central Macedonia

A first approach on the needs, that PSIP could satisfy, for the ICT companies in Region of Central Macedonia can group the required information in three main categories. 1) The improvement of quality of the products and services can be done by providing information on technologies and innovation management techniques. 2) A system that will organize and watch information related to markets. 3) The proposed methodological guide book that STRATINC will produce will satisfy the need for information management

APPENDIX A: List of Companies on ICT Sector in the Region of Central Macedonia

COMPANY	City	Perfecture	Telephone	company_e-mail	website
BENTOYZHS IOANNHS & SIA	Thessaloniki	Thessaloniki	2310 520294	infocopy@the.forthnet.gr	www.infocopy.gr
DATABIT-HITECH SA	Thessaloniki	Thessaloniki	2310 600454		
PROTASIS AE	Thessaloniki	Thessaloniki	2310 720951	info@protasys.gr	www.protasys.gr
INFORMATION QUALITY SYSTEMS AE	Thessaloniki	Thessaloniki	2310 489131	billk@iqs.gr	www.iqs.gr
NTAKOS AE	Thessaloniki	Thessaloniki	2310 552737		www.dakos.gr
TECHNEKO ELLAS ABEE	Thessaloniki	Thessaloniki	2310 850939	techneco@internet.gr	www.techneco.gr
LION ELECTRONICS HELLAS	Thessaloniki	Thessaloniki	2310 544430	sales@lion.gr	www.lion.gr
SOLUTIONS SYSTHMATA PLHROFORIKHS-LYSEIS EPE	Thessaloniki	Thessaloniki	2310 540386	solu-ltd@otenet.gr	
MEDIAWISE INTERNATIONAL EPE	Thessaloniki	Thessaloniki	2310 252080	info@mediawiseint.com	www.mediawiseint.com
ADVANCED SOFTWARE TECHNOLOGIES	Thermi	Thessaloniki	2310 498289	ast@techpath.gr	www.techpath.gr
CPI A.E	Thessaloniki	Thessaloniki	2310 531334	epig@cpi-the.gr	www.cpi.gr
PC SYSTEMS	Thessaloniki	Thessaloniki	2310 545543	info@pcsystems.gr	www.pcsystems.gr
ALFANET A.E	Thessaloniki	Thessaloniki	031 500760	info@alfanet.gr	www.alfanet.gr
TSALKITZIDHS-REKOS OE	Thessaloniki	Thessaloniki	2310 533694	organotiki@northnet	
CYBERSOFT EPE	Thessaloniki	Thessaloniki	2310 943733	sales@infoshop.gr	www.infoshop.gr
MEMONET-TSOMPANIDHS A & SIA	Thessaloniki	Thessaloniki	2310 556557	sales@memonet.gr	www.memonet.gr
ERGON IRIS A.E	Thessaloniki	Thessaloniki	2310 469250	iris@iris.gr	www.iris.gr
MIK3 OLOKLHROMENES LYSEIS PLHROFORIKHS	Thessaloniki	Thessaloniki	2310 887040	mik3@attglobal.net	
DATAWORKS	Thessaloniki	Thessaloniki	2310 248028	info@dataworks.gr	www.dataworks.gr
ORBIS A.E	Thessaloniki	Thessaloniki	2310 320662	info@orbis.gr	www.orbis.gr
INTELLECTRON BIOMHCHANIKA HLEKTRONIKA A.E	Evosmos	Thessaloniki	2310 776008	sales@intellectron.com	www.intellectron.com
AFOI CHATZHEYFRAIMIDH O.E	Thessaloniki	Thessaloniki	2310 548462	info@infowood.gr	www.infowood.gr
DEFENDER GROUP PAGKOSMIA DIASYNDESH A.E	Thessaloniki	Thessaloniki	2310 541901	info@defender.gr	www.defender.gr
BULL AEE	Thessaloniki	Thessaloniki	2310 423866		www.bull.gr
FORTHNET AE	Thessaloniki	Thessaloniki	2310 256171		www.forthnet.gr
KARMA-OKTABIT AE	Thessaloniki	Thessaloniki	2310 551394		www.karmadis.gr
COMPUTER TEAM AEBE	Thessaloniki	Thessaloniki	2310 402120	root@cteam.the.forthnet.gr	
CHRONOS,DIACHIRHSH-ELEGCHOS ERGON	Thessaloniki	Thessaloniki	2310 870503	main@chronos.gr	www.chronos.gr
QUEST THESSALONIKHS ABEE	Thessaloniki	Thessaloniki	2310 391111	questsal@hol.gr	www.quest-thessaloniki.gr
LOGISMOS-MHCHANOLOGISTIKH A.E	Thessaloniki	Thessaloniki	2310 267923	info@logismos.gr	www.logismos.gr
YPHRESIES ANOIKTHS TECHNOLOGIAS A.E	Thessaloniki	Thessaloniki	2310 950004	info@ots.gr	www.ots.gr
CARDISOFT PLHROFORIKH EPE	Thessaloniki	Thessaloniki	2310 933371	info@cardisoft.gr	www.cardisoft.gr
MLS PLHROFORIKH	Thessaloniki	Thessaloniki	2310 929090	mail@mls.gr	www.mls.gr
COMPUCON EFARMOGES YPOLOGISTON ABEE	Thermi	Thessaloniki	2310 490300	info@compucon.gr	www.compucon.gr
P.PARASCHOS-G.MPAMIEDAKHSO.E INFODHM	Thessaloniki	Thessaloniki	2310 429444	mailbox@infodim.gr	www.infodim.gr
D.X. SYMBOYLOI MHCHANIKOI A.E	Thessaloniki	Thessaloniki	2310 851691	dx@hol.gr	www.dxa.gr
RAYCOM COMPUTERS	Thessaloniki	Thessaloniki	2310 525206	info@raycom.gr	www.raycom.gr
K.BAMBALHS-G.EYFRAIMIDHS & SIA E.E	Thessaloniki	Thessaloniki	2310 233266	support@atlantisresearch.gr	www.atlantisresearch.gr
MHCHANOGRAFIKH EPE	Thessaloniki	Thessaloniki	2310 424581	michano@spark.net.gr	
NTESPEK ELLAS A.E	Thessaloniki	Thessaloniki			www.despec.gr
"MICRO" KYRIAZH	Thessaloniki	Thessaloniki	2310 960250	micro@the.forthnet.gr	
MAKEDONIKA	Thessaloniki	Thessaloniki	2310 326190	info@makper.gr	www.makper.gr

COMPANY	City	Perfecture	Telephone	company_e-mail	website
PERIFEREIAKA A.E					
THINX-AE-PLHROFORIKH	Thessaloniki	Thessaloniki	2310 638010	sales@thinx.gr	www.thinx.gr
ERGOGROUP A.E	Thessaloniki	Thessaloniki	2310 925390	ergogroup@ergogroup.gr	
B-LOGICA SOFT	Thessaloniki	Thessaloniki	2310 288002	blogica2@otenet.gr	www.blogica.gr
SILICON	Thessaloniki	Thessaloniki	2310 240077	silicon@spark.nd.gr	www.silicon.gr
TELCOMAT PLHROFORIKH AE	Thessaloniki	Thessaloniki	2310 900517	telcomat@profinet.gr	www.telcomat.gr
TECHNIKH MHCHANOGRAFIKH AE	Thessaloniki	Thessaloniki	2310 306743	texnikh@alphanet.gr	
COMPUTER LIFE ABEE	Thessaloniki	Thessaloniki	2310 307061	clife@computerlife.gr	www.computerlife.gr
KISWARE AEBE	Thessaloniki	Thessaloniki	2310 857551	kis@kisware.gr	www.kisware.gr
DATALEX A.E	Thessaloniki	Thessaloniki	2310 325961	infonorth@datalex.gr	www.datalex.gr
PSHFIO	Thessaloniki	Thessaloniki	2310 279812	psifio@the.forthnet.gr	
DIKTYO KAPROYKANIDHS & SIA OE	Thessaloniki	Thessaloniki	2310 422 005	diktyo@hol.gr	
POYLIADHS & SYNERGATES A.E.B.E	Thessaloniki	Thessaloniki	2310 592592	vdrits@athos.pouliadis.gr	www.pouliadis.gr
LOGODATA PCS	Thessaloniki	Thessaloniki	2310 552891	info@logodata-pcs.gr	
OTE AE	Thessaloniki	Thessaloniki	2310 247999	nv122545@tpkm.ote.gr	www.ote.gr
SINGULAR INTERNATIONAL SA	Thessaloniki	Thessaloniki	2310 590100		www.singular-international.com
BEST AE	Thessaloniki	Thessaloniki	2310 685830	best@best-tech.gr	www.best-tech.gr
CHARIZANH ANDRONIKH	Chalkidona	Thessaloniki	0391 23882	charizan@otenet.gr	www.charizani.gr
PANSYSTEMS AE	Thessaloniki	Thessaloniki	2310 866255	mpsthes@attglobal.net	www.pansystems.gr
OROSHMO PLHROFORIKH A.E	Thessaloniki	Thessaloniki	2310 326576	orosimo@orosimo.com.gr	
LOGIC DIS A.E	Thessaloniki	Thessaloniki	2310 321900	ddi@north.logicdis.gr	www.logicdis.gr
ERGO DESIGN	Thessaloniki	Thessaloniki	2310 417441	ergodes@spark.net.gr	
ZERO ONE AE H/Y ABEE	Thessaloniki	Thessaloniki	2310 328728	sales@zeroone.gr	www.zeroone.gr
GRUYERES INTERNATIONAL EPE	Thessaloniki	Thessaloniki	2310 837250	gruyeres@gruyeres.gr	www.gruyeres.gr
ASE ADVANCED SOFTWARE FOR ENGINEERS	Thessaloniki	Thessaloniki	2310 943180	yiannis@otenet.gr	
3A - SIDERHS MICH.SABBAS	Thessaloniki	Thessaloniki	2310 327961	info@3a-psion.gr	www.3a-psion.gr
ZEYXH AE	Thessaloniki	Thessaloniki	2310 531312	zefxi@hol.gr	
GNOMON PLHROFORIKH A.E	Thessaloniki	Thessaloniki	2310 244331	info@gnomon.com.gr	www.gnomon.com.gr
OR-CO	Thessaloniki	Thessaloniki	2310 541247	info@or-co.gr	www.or-co.gr
SOFT SUPPORT	Thessaloniki	Thessaloniki	2310 833163	info@camber.gr	www.camber.gr
PROTOGRAMMA	Thessaloniki	Thessaloniki	2310 869301	admin@protogramma.gr	www.protogramma.gr
KYM EPE	Thessaloniki	Thessaloniki	2310 221248	info@kym.gr	www.kym.gr
INFOLAB	Thessaloniki	Thessaloniki	2310 914191	info@infolab.gr	
GELCO	Thessaloniki	Thessaloniki	2310 301081	info@gelco.gr	www.gelco.gr
DANILOYDHS	Thessaloniki	Thessaloniki	2310 238862	hellas@hermes.gr	www.e-hellas.gr
TECHNODIASTASH	Thessaloniki	Thessaloniki	2310 223966		
KENTRO PLHROFORIKHS	Lagkada	Thessaloniki	2394 024328	tzitzi@otenet.gr	
PARASCHOS CHARALAMPOS	Thessaloniki	Thessaloniki	2310 243611		
ALFA PLHROFORIKH AE	Thessaloniki	Thessaloniki	2310 531374		www.alpha.net.gr
KNOWLEDGE	Thessaloniki	Thessaloniki	2310 907476	icsgroup@spark.net.gr	
ELLHNIKH ANAPTYXIAKH	Thessaloniki	Thessaloniki	2310 855800	info@epsilon7.gr	www.epsilon7.gr
UTN	Thessaloniki	Thessaloniki	2310 531250	info@utn.gr	www.travel.gr
AMERICAN COMPUTERS & ENGINEERS HELLAS SA	Thessaloniki	Thessaloniki	2310 438960	north@ace.hellas.gr	ace-hellas.gr
MICROLINK	Thessaloniki	Thessaloniki	2310 243874	info@microlink.gr	www.microlink.gr
SMDATA	Thessaloniki	Thessaloniki	2310 649000	smdata@smdata.gr	www.smdata.gr
ATS PLHROFORIKH ABEE	Thessaloniki	Thessaloniki	2310 449402	atsnet@otenet.gr	
NETKONNEKT A.E	Thessaloniki	Thessaloniki	2310 330060	netconnect@netconnect.gr	www.netconnect.gr
THOMASIADHS-TSELIOS O.E	Naoussa	Imathia	23320 26611	clnao@forthnet.gr	
ATHANASIADHS GEORGIOS(COMPUTER FORCE)	Veria	Imathia	23310 25188	cforce@otenet.gr	www.cforce.gr
INFO BUSINESS LOGIC	Katerini	Pierria	23510 24800	info@hor.gr	
MEDIA-SOFT COMPUTERS	Katerini	Pierria	2351 038998	medias@spark.net.gr	www.mediasoft.gr
COMPUTER PROGRAM-PETKOGLOY	Serres	Serres	23210 53453	info@computer-program.net	www.computer-program.net
Byte Software AE	Thessaloniki	Thessaloniki	2310 864747		

COMPANY	City	Perfecture	Telephone	company_e-mail	website
DataTeam	Thessaloniki	Thessaloniki			
Olympia Electronics	Katerini	Pierria	23530 51200		
3X Diastasi	Thessaloniki	Thessaloniki	2310 550515		
AUTO3P Hellas AE	Thessaloniki	Thessaloniki			
e-Global	Thessaloniki	Thessaloniki			
Laserlock	Thessaloniki	Thessaloniki			
KARMA-OKTABIT AE	Thessaloniki	Thessaloniki			
Optimum	Thessaloniki	Thessaloniki			
MK Software	Thessaloniki	Thessaloniki	2310 300114		
EXIN	Thessaloniki		2310 850364		