

Fundamentals of the strategic analysis of the information

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Abstract

If the organizations, in the current information society, intend to be competitive, cannot be exposed to the risk of ignorance. But if they aim for continuity in their progress, they cannot be exposed at an external, extreme and continued pressure either, because this would burst the organization with too much information without the filters that sort its significance. The key for the organizations is not the information, but the flow of selected and treated information that these are capable of assimilating and that is useful for them to design their strategy.

In front of this righteous requirement, Competitive Intelligence (CI) is defined as the systematic process of retrieval, treatment, analysis, representation, interpretation, and diffusion of the information about industry and the competitors, all with the final objective of giving support to the decision making process. CI represents an organizational function with huge strategic value.

1. Strategy versus competition

The advantage provided by the implementation of competitive intelligence within the organizations explains the fact that in recent decades CI has enjoyed an impressive expansion to the point of establishing itself rapidly as an emerging multidisciplinary science. The countries that have recognized the enormous potential of the strategic management of knowledge - the U.S., Japan, Germany, France and the French-speaking countries, and Sweden - are leading the world in the practical and conceptual developments in the field of competitive intelligence.

The origins of competitive intelligence are in the practice of technology watch that is defined as the process of searching and analyzing information on scientific innovations, techniques and technology that may pose a risk or an opportunity for my businesses. The technology watch traditionally works from the exploitation of databases of scientific papers and patents. These analytical procedures for the synthesis of useful knowledge, when referring to the lines of scientific research, are in the field of Scientometrics, and when patents are studied we are entering the field of Patent Bibliometrics.

Innovation and the ability to improve the quality of the products have gained a very important role for businesses in the knowledge era. This importance is reflected in the fact that the impact of new information and communication technologies and the urgency imposed by the increasing competition in a globalized market, have both caused that the strategic direction and strategy studies in the field of the organizations have been reduced to the consideration of the unilateral three - competition - technology – innovation -.

This unilateralism is one of the main factors, a limiting factor to our understanding, of the current approaches to competitive intelligence that can be seen from the observation of business practices and the reviews of the literature. On the other hand though, new approaches are beginning to gain ground particularly in Europe, which emphasize on the fact that beyond an informational or knowledge society, we are witnessing an era of intelligence.

In front of business-led liberal aggressive approaches, "info-intoxicated = infoxicated" (in terms of Cornella, 1994), obsessively marked by concepts such as success, competitiveness and innovation, new intelligent and integrated management approaches are emerging. These new ways are more in line with the sustainability of progress and the real nature of the domestic tasks of organizations, though based on the concept of strategy.

It is known that the strategy of the organizations is, in practice, in the ability to measure and control the entire set of factors that influence their activity, making it mandatory - if we want to provide coverage for the intelligent management - to maximize the field of analytical procedures of the measurement and evaluation disciplines, the so-called metrics, as a whole.

Informetrics, defined as the quantitative analysis of the information, provides not only quantitative results but also qualitative, relational and conceptual, useful for the evaluation of the organization's outputs and for establishing networks of relationships between the actors involved in these. Informetrics role as the architectural framework of all the sub-metrics and as homogenizing agent of the implementation of the set of techniques and methods for measuring instrumental disciplines such as mathematics or statistical information can interfere with the analytical procedures developed in the operating part of the intelligence of organizations.

Informetrics, as a single disciplinary platform, allows us to consider all the levels of the organizational activities, quantify and evaluate the environment, the training and the organizational

goals, the competition, the economic variables as well as scientific and technological factors, and in last place, the conditioned factors from the adopted strategy. Informetrics has the potential to lift us up to a brand new framework for action that goes beyond the competitive intelligence; it is the so called Strategic Intelligence (SI)

The road is not an easy one though. The deficits related with the scientific and disciplinary foundations of the procedures that Strategic Intelligence introduces, are explained by its multidisciplinary and comprehensive character, but also by the complex challenges that Informetrics introduces when it comes to systematizing the methodologies and analytical techniques applied in different ways, levels, and deployment and operational phases.

When adopting a sustainable strategy and intelligent management, we opted for the integration of all types of surveillance for the activation of resources and goals of the organization in strategic intelligence, but also, we opted for the incorporation of structural the corresponding sub-metric will have to provide an analysis of its segment of surveillance.

Here in brief the essential need for research that justifies and presents this work: we can only maintain the horizon and a sense if we can substantiate the proposed practice of strategic intelligence on scientific bases through the systematization of analytical procedures used in the framework of a global metrical discipline such as Informetrics, which should guarantee the necessary methodological and technical homogeneity, its universality and extensibility.

2. Informetrics

The subdisciplines consisting on metric and statistic analysis of information (scientometrics, bibliometrics, sociometrics, econometrics, surveys on users of information, etc.) that are integrated into the concept of Informetrics are critical because they support the intelligence functions of the organization and help develop the corporate strategy. The quantitative treatment of the information orientates its procedures of measure of the phenomena, activities, functions, services, etc, to the evaluation of the same ones, so that its practice is extensible and required for every area and type of information. For this reason, Informetrics on one hand has some very high possibilities of knowledge transfer to the social and economic environment and on the other hand it could be the methodological discipline that can give coverage to all the needs of the organizations related with the retrieval of the information, the synthesis and the analysis, representation, interpretation and diffusion of indicators (Precisely, these are the subjects that are included by definition in organizational intelligence).

Informetrics provides a big part of the tools constituted by its methods and techniques that place it like the axis in the middle of the operating mode of the same one. For this reason, it is not strange that precisely bibliometrics of patents and Sciencemetrics, (subdisciplines of Informetrics), are in the genealogical origin of the technological watch and competitive intelligence.

In the last decades, in the area of information and documentation sciences, the support function of the metric disciplines in the organizations has been proved especially useful, as we said before, in the analysis of the scientific production and the creation of patents, as many organizational activities depend on being well briefed of the trends of the scientific research that is being done, and of the technological opportunities out there. Many other studies about the methods and techniques of Informetrics analysis have been developed away from the competences of these areas. These studies have provided great knowledge in areas such as market exploration.

The all-comprehensive, extensive capacity of Informetrics is fundamental to grasp its huge potential and its incidence in the operating structure of organizational intelligence.

3. The competitive intelligence and the management of knowledge

Research on competitive intelligence and strategic intelligence has awakened thanks to practical research on the subject of Informetrics pushed by their aspects in common, and for this reason they have generated a remarkable and increasing interest among the scientific community. "The process of retrieval, analysis, interpretation and diffusion of information of strategic value on the industry and the competitors (...) that is transmitted to the decision makers with the right timing"(Gibbons and Prescott, 1996) and it has defined the competitive intelligence process, as well as some characteristics of the technology watch process such as "knowing the research lines, the work of the competitors, the leader companies of a certain product" (Escorsa, 2002), and it is at present applicable to every environment that involves an organizational activity.

From a detailed analysis of the area of application of the competitive intelligence, in this research we will be defining the horizon of the discipline that we have previously defined as strategic intelligence founded in the systematic treatment of the global information that conditions and implies the organizations' activities.

The latest conceptual discoveries on the subject of competitive intelligence aim at an enlargement of the horizon in the analysis of the subordinating factors of any organizational activity directed at its projection, and because of that, these factors force the experts to center their attention in a systematic way not only on the subject of innovation and/or the advantage provided by the

technology, but also on all those areas that affect globally the achievement of its goals in a direct or indirect way.

In this restatement we should also consider the management of knowledge, which has, since its emergence in the 90's, been considered as a discipline that takes care of the organizational internal knowledge: resources, processes, structure, etc (Alavi and Leidner, 1999, Davenport, De Long and Beers, 1998; Andreu and Sieber, 1999; Pan and Scarbrough, 1999; Rastogi, 2000); while the competitive intelligence explores the signals of the requirement and orients itself towards the future (Nordey, 2000).

Although certainly in the last decades the management of knowledge has been considered as a complementary discipline to the competitive intelligence (Smith and Fletcher, 1999; Nordey, 2000; Kalb, 2000th), and some authors have even announced that both disciplines should merge into one (Kalb, 2000 b; Escorsa and Maspons, 2001), the competitive intelligence has kept on reaching, moved by the need of a continuous restatement of its definition, the similar and external areas that, in a traditional way, came from the technological watch.

4. The strategic intelligence

The intelligence has substituted the technology watch, formally passive, to incorporate active factors into the exercise of its competence but now it is clear that the watch of the intelligence has stopped being only a watch of the tech-innovation factor to spread its reach to the inside and the outside of the organization, to the economic results, to the methods and techniques of support for the efficiency in the decision making, in order to guarantee the success of any company.

In the current state of the conceptual deployments consulted in this research, the intelligence on its latest formulation that we present here has stopped being competitive intelligence to become strategic intelligence. It has integrated practically all the levels of watch among which there is the technology watch that is the base of the competitive intelligence and the organizational watch, just like the management of the knowledge. This integration places the strategic intelligence in a higher level above the competitive intelligence and the management of knowledge. These last two get then placed like constitutive phases of an upper rank process.

5. The Informetric foundations of the strategic intelligence

From the determination of the foundations of the informetric analysis, that include the levels, the modes, the moments or phases and the operating deployments that sort the application of the analysis techniques of the information developed in the practice of the intelligence in the organization, and that promote the consolidation of the strategic intelligence, we can proceed to making an analysis of the indicators that are being considerate according to the typology of the datum that they treat, the modality of the analysis where they happen, while detailing its constitution as Sciencemetrics (activity indicators, impact indicators, relational of first, second and third generation indicators, network models, etc) all in order to find the projection of their classificatory criteria indicators in the subject of Informetrics in general, and to propose their effective applicability.

This projection has to allow us to obtain some objective order criteria, in order to make it possible for us to deduce a typological systematic classification of informetric indicators with universal validity for any level of the organizational activity and for any form of metric analysis. This classification materializes in a table of universal classification of informetric indicators.

6. Context of our proposal

From the research on the subject of the informational analysis directed at obtaining useful knowledge (trends) of the relations that constitute a determinate universe (of scientific or entrepreneurial activity, etc) it has been possible to identify the informetric foundations of strategic intelligence. In abstract, this evolution indicates the ascendant progress of the strategic knowledge following the quantitative disciplines, the information metrics. These metrics have their foundations on the kind of intelligence that watch procedures display when it comes to achieving a measure, in analogy with a tree of distribution among them.


Phases	<i>Organizational intelligence model, from the 90's</i>	<i>Organizational intelligence model of the new millenium</i>	Analogy	The "intelligence Tree"
Active integration in strategic direction	Competitive Intelligence	Inteligencia <i>estratégica</i>	The top of the tree, the achieved intelligence	
Instrumental and functional activity of the organization	Technology Watch	<i>Watch on environment, organization, Competitors, the economy, the technology and the strategies</i>	The trunk, the watch procedure displayed	
Cuantificación y análisis de los factores condicionantes de la actividad de la organización	Bibliometrics: Sciencemetrics and patent metrics	<i>Informetrics</i>	The metric roots	

Table 1: Analogy with the intelligence tree applied to the phases and models of organizational intelligence.

With time, this structure has been drawn in the form of a literal succession of titles that with scientific and informative goals have been presented on the subject in the last decade.

In 1993, within the collection "*Que sais-je?*" (Paris, *Presses Universitaires de France*) Michel Callon, Jean-Pierre Courtial and Hervé Penan published *The Scientométrie*. In 1995, the authors presented to the Spanish public the translation that was also updated and expanded for the same work (published by Trea editions), with the subtitle "The quantitative study of scientific activity: From Bibliometrics to Technology Watch".

The decade of the'90s was a period of maturation in the French speaking countries and a period of consolidation in the Anglo-Saxon countries of the concept "Environment watch" (Cohen, 2000). In this decade, the concept of competitive intelligence emerged.

The consolidation of competitive intelligence around the world came in the late twentieth century. In Spain, in 2001, Pere Escorsa and Ramon Maspons published "Pearson Education: Technology Watch in Competitive Intelligence".

With the arrival of the new millennium, competitive intelligence is beginning to prove insufficient to cover the complex web of interests that cross the strategic management of organizations. To provide the elements to counter this deficit, in 2004 the title "Fundamentals of the informetric analysis" was presented, with the subtitle "From the competitive intelligence to the strategic intelligence."

Therefore, the following evolution has been determined:

1. From bibliometrics to technology watch
2. From technology watch to the competitive intelligence
3. From competitive intelligence to strategic intelligence

7. Ecology of information

Empirical work and organizational reality, when kept away from far too theoretical developments, provide us with evidence that strategic decisions are complex, often have to be taken in situations of uncertainty, may require an integrated approach to managing the organization and may involve changes in organizations (Johnson and Scholes, 2000), which feeds its necessity.

The strategy is generally defined as the art of coordinating actions and maneuver in order to achieve a purpose. In the political sphere, for example, strategy is the coordination of political, economic and diplomatic efforts to achieve the objectives of a state, a group or a party. In the business world is the direction and scope of an organization to achieve long-term benefits through its configuration of resources in a changing environment, to meet the market needs and satisfy the expectations of the stakeholders: shareholders, financial institutions, managers, employees, buyers, suppliers, local community, and so on.

We understand that:

1. In terms of maximizing the competitiveness and strategic management we have to start considering factors that frame the external and internal exercise of this competence: we cannot restrict the exercise of intelligence to the field of innovation factors.
2. In terms of ecology of information, the concept of strategy identifies in a better way the new open space with the concept of intelligence being now more extensive, and the traffic of a model based on the extent of the potential success according to an external reference to a model based on a comprehensive reference: environment, objectives and training, risk factors, and so on.

Finally, we can summarize this introduction by saying that the emergence of organizational intelligence in much more complex ways is related with the consolidation of Informetrics as a methodological discipline. At the intersection, the observed trend of the integration at a higher degree of knowledge management in the heart of the strategic intelligence generated a review of the conceptual and operational relationships that the different kinds of watch and knowledge managements share, all with the same source and destination: the strategic knowledge, strategic intelligence and informetrics.

We conclude by saying that a new picture of the general overview of the information and communication sciences has been defined, being the results of this investigation a basis for redefining them.

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