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The Strategic Decision Making and Sources of Information

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ABSTRACT : The objective of the work is to contribute to a reflection on the sources of information for decision-making by managers andentrepreneurs.The information and knowledge society need a study on the challenges facing managers and entrepreneurs in the 21st century. In recent years we have seen a major transformation in the civilized world. Today are the knowledge and information that bind society and organisations, having become the information itself in an industry
And it is necessary to understand the importance of sources of information, since their innocence can be compared with Madame Curie's innocence, when he manipulated uranium in her laboratory, unaware of the dangers to which he was exposed, eventually paying this scientific innocence with his own life. In the handling of information sources and need to move from innocence to knowledge, so that managers / decision makers can have a scientific understanding of the sources of information for decision making and that they can manage them.

KEYWORDS: *Information, Knowledge, Sources of information; Weak and strong signals, Clues / Alerts.*

I. INTRODUCTION

The current context of intense competition, business globalization and continuous technological development has required entrepreneurs and organizational managers to rely on accurate, relevant and reliable information in decision making. Understanding what sources of information should be based on decision-making is essential to understand their informational behavior. It is of fundamental importance for information providers, which involves, among several aspects, the criteria used for the choice of sources of information (frequency of use, relevance and reliability). The present work focuses on the informational behavior of entrepreneurs and managers of small, medium and large enterprises, andthe choice of information sources considered important for the solution of their organizational needs, indecision-making.

Approach Methodology

As for its nature, a clear and reasoned narrative of the domains of complexity in which the relationship between sources of information and decision-making by the different managers and entrepreneurs is determined. Its focus is on the sources of information and the challenges facing managers and entrepreneurs. The economy of information and knowledge is based on the ability to create value from its essential raw material which are data and its meanings. The clear distinction of this double dimension of information sources and decision-making by managers and entrepreneursunderlies the distinction made between the information that allows the design of the strategy of organizations and the strategic use of information in the positioning of companies and organizations.

Fundamental Concepts

Introduction

We learn about the world in general and about the global and immediate surrounding environment in many ways: we observe, listen, read and experience, and thus increase our knowledge. However, the perception we get from reality is not always reliable. But when knowledge about a particular phenomenon is obtained according to a scientific methodology, that is, it is the result of research carried out by scientists, according to defined and controlled rules, then greatly increase the probabilities that our understanding of this phenomenon is correct. We call knowledge thus obtained scientific knowledge or science (Kerlinger, 1979).
Reliability is one of the most important characteristics of science, because it distinguishes it from popular, non-scientific knowledge. To obtain reliability, in addition to the use of a rigorous scientific methodology for the

generation ofknowledge, it is important that the results obtained by the research of a scientist are disseminatedand submeters the judgment ofother scientists, their peers.

Information and Knowledge

Although the terms information and knowledge are used very often, they are not the same thing. Information is not the same as data, although the two words are often confused, so it is understood that the subtle distinction between these concepts is essential. Data do not convey meaning or meaning of facts, images or sounds, since they lack relational elements indispensable to the establishment of a complete meaning, lacking an internal relational structure for a cognitive purpose.

This structure is one of the attributes of information. Data becomes information when its creator adds meaning (Davenport and Prusak, 1998). Wiliam G. Zikmund (2000, p.19) defines knowledge as "the mixture of information, experience and understanding that provides a framework that can be applied to the assessment of new information or new situations". Information "feeds" knowledge. Knowledge can thus be defined as a person's ability to relate complex information structures to a new context.

New contexts imply change, action and dynamism. Knowledge cannot be shared, although the technique and components of information can be shared. When a person internalizes information to the point of being able to use it, we call it knowledge (Zikmund, 2000). This is a fluid mix of structured experiences, values, contextual information and expert insight that provide a framework for evaluating and incorporating new experiences and information. In organizations it is found not only in documents and reports, but also in organizational routines, processes, practices and standards.

Knowledge has its origin and is applied to the minds of connoisseurs (Davenport and Prusak, 1998, William Zikmund, 2000). Knowledge is information as valid and accepted, integrating data, acts, information and sometimes hypotheses. Knowing requires someone to filter, combine and interpret information. Information can be considered as a "substance" that can be acquired, stored and owned by a person or a group and transmitted from person to person or from group to group.

Information has a certain stability and may be better viewed as existing at the societal level (Davenport and Prusak 1998). Although we may store it by employing various physical supports, the information itself is not physical, but abstract and so purely mental. Knowledge is stored in people's memory, but information is out there in the world. Whatever it is, there is somewhere between the physical world around people and the mental world of human thought.

Knowledge = Internalized information + ability to use it in new situations.

Knowledge lies fundamentally and intrinsically within people. These are more complex and unpredictable at the individual level than an entire society, so it is not surprising that knowledge is much harder to obtain than information. Knowledge exists mainly within people; it is an integral part of human complexity and unpredictability.

Knowledge has a fundamental duality: it is something storable (at least sometimes we intend to do so) and something that flows (something that communicates from person to person). It is possibly the duality of knowledge (thing that flows and the storage process) that makes its treatment and management difficult. According to Dahlberg (2006) knowledge is organized into knowledge units (concepts) according to their characteristics (objects / subjects / subjects). Knowledge organization is related to a process of conceptual analysis of a knowledge domain and from there it is structured / archived generating a representation of knowledge about such domain that will be used for the organization of information about that knowledge domain.

Sources of Information

For entrepreneurs and managers of organizations, it is important to know the sources of information, internal and external, which involve the global and immediate environment in which the organization is inserted, because these sources vary in formats, nature and content, which will influence the process of use of these sources, in decision making. For Cunha (2001), sources of information may cover manuscripts and printed publications, as well as objects, such as works of art or museum pieces, and can be divided into three categories: primary documents, secondary documents and teeterdocuments.

Choo (1994, 2006) classifies sources of information into four categories: external and personal, external and impersonal, internal and personal, and internal and impersonal. The author states that information is an intrinsic component of almost everything an organization does. Primary sources express direct interference of the author; secondary sources facilitate the use of knowledge of primary sources, since there is a differentiated treatment forthem, according to their function; tertiary sources allow primary and secondary sources to be found.

Ribeiro (2009, p. 44), groups sources of information in: external personal sources - colleagues from other companies, specialists, customers, competitors, consultants, brokers, partners, fairs, congresses or lectures (face-to-face or telephone interaction); personal and internal sources - employees, co-workers, hierarchical superiors, partners (face-to-face or telephone interaction); electronic personal sources: email (personal or company), forums, discussion groups, discussion groups, partners (face-to-face or telephone interaction); electronic

personal sources: email (personal or company), forums, discussion groups, discussion groups, discussion groups; on the web, Messenger, Skype and the like; fontes impessoais externas - documentos produzidos fora da empresa, como revistas, jornais, livros, relatórios, periódicos técnicos, regulamentos, publicações governamentais, transmissões de rádio ou televisão; fontes impessoais internas - documentos produzidos dentro da empresa, como relatórios, estudos, memorandos, arquivos em papel e anotações de trabalho; e fontes impessoais eletrônicas - documentos eletrônicos em geral, intranet, bases de company electronic data, company website, online commercial and government databases, various Internet sites, news portals.

Weak and Strong Signs

The weak signals, initially used in military strategies (Ansoff, 1975; Choo, 2009), has since spread in several areas of knowledge, such as studies focused on the exploration of the future; prevention of disasters or natural disasters, medicine, and, in organizational studies, in the fields of strategy, management and information systems. In all areas mentioned, the main objective of the study of weak signals is identical: to anticipate uncertain, unexpected events with significant potential impact on organizations in order to be better prepared to decide or act when same occur (Choo 2009; Lesca & Lesca, 2011; Holopainen & Toivonen, 2012; Mayer et al. 2013).

But what are weak signs? Weak signs are defined by Rossel (2012) as perceptions of possible changes, essentially hypothetical, within a process of building socially relevant knowledge. Detailing a little more, Schoemaker and Day (2009) describe weak signals as part of the information, apparent, random or disjointed, which at first glance looks like a bottom noise, but which can be significant, if viewed from other perspectives, or related to other information.[1]

Clues / Anticipatory Alerts

In the field of strategic management and anticipatory interpretation, the difference between signal and sign/alert lies in the intention of the information issuer and, consequently, the meaning and reliability of the information. The word "sign" implies a deliberate intention on the part of the sender to communicate that information. This form approaches the idea of signaling, such as the analysis of competition through public manifestations (like market signals).

Porter (1982) indicates that market signals allow us to know the intentions and future actions of competitors. When it comes to the situation of anticipation of information in the area of strategic management, it is not what the sender explicitly wishes to communicate what interests us most: it can be a deception or common information. Conversely, what we may potentially interest is not always the subject of a deliberate issue of the emitter. What may interest us most and of greater importance are, the emissions and involuntary manifestations, not deliberate, of the "authors" of the change that we wish to anticipate. In this case, we can say that we are facing **clues / alerts**.

Theoretical Development

The Globalization of Information

In an era of communications on the globe scale, information is the link that unites us. As we can transmit it in large quantities quickly from continent to continent, we transform a largely separate and diverse world into a single global megalopod. The walking messenger gave way to the world-wide information highways.

Whatever it is can constitute an asset, to be compiled, stored, duplicated, sold, stolen and sometimes source of murder. Many people around the world spend their day of work gathering, studying and processing information. Industries were developed to produce equipment (and software) to store and process information.

Organizations have many physical assets that need to be managed, such as products, financial goods and others. Information on the environment involved in terms of strategic management today requires permanent attention and can be regarded as the most asset, so in so-called knowledge-based economies, information is taking on an increasing share of the cost of doing business successfully.

In industrial society *crude* oil was an important source of energy used to move engines and power factories. But before the chemical energy of oil could be triggered, crude had to be refined, that is, in usable forms such as gasoline and heating fuel. Similarly, information is the source of energy that drives the "*engines*" of the so-called knowledge society, but in order to use it we need to convert it into a usable form: **knowledge**.

But when we refine the information to transform it into knowledge the quality weighs more than quantity. When we convert information into knowledge, we add value to it and make it more expensive.

Over the past few years, in most Western countries it has been seen that the industrial sector, largely responsible for the wealth they have accumulated since the 19th century, is losing weight in gross domestic product (GDP)

compared to the services sector, result of the transformation of industrial society into information society (Moore, 1997) for three reasons:

- Organizations increasingly rely on the intelligent use of information and become information-intensive organizations;
- People in their daily acts consume large amounts of information both in terms of leisure and business;
- The information industry is emerging within the diversity of the services sector as aenough entity to be a sector (perhaps the best) of the major sectors of the economy (primary, secondary and tertiary sectors). The industry can consist of three sectors: information content, information distribution (access centres and distribution channels, such as telecommunications operators and the Internet) and information processing (information technologies)

The transformation of organizations into informationally intensive is perhaps the clearest detonating of the change to informationsociety. The analysis of the most successful organisations in the world seems to indicate that it originated in better management of information and knowledge about the global and immediate environment, that is, those that have managed to better detect the needs of the market and that better adapted in terms of configuration, methods, processes and cultural forms that allowed combining external information with that generated internally to generate distinctive competitive advantages (Porter, 1998).

Globalization, a concept often used for business organisations, must be seen beyond the opening or not of borders, countries, markets and organisations themselves. The information, regardless of its geographical origin or the time at our fingertips, is within our reach via the phone keyboard, computer or television screen.

The Sources of information

For strategic decision-making, it is important to identify and know the sources of internal and external information, which involve the organization's global and immediate surrounding environment, since these sources vary in format, nature and content, which will influence the process of formulating the strategy and its decision-making.

According to Cunha (2001), the sources of information are manuscripts and printed publications, as well as objects such as mineral samples, works of art or museological pieces, and can be divided into three categories: primary documents, documents documents. Choo (1994, 2006), classifies organizational sources of information into four categories: external and personal, external and impersonal, internal and personal, and internal and impersonal. The author considers that information is an intrinsic component of almost everything an organization does

Pacheco and Valentin (2010, p. 334), state that the categorization of information sources makes it possible to understand the size of each and their function, that is, primary sources express the direct interference of the author; secondary sources facilitate the use of knowledge of primary sources, since there is a differentiated treatment for them according to their function and arrangement; and tertiary sources allow primary and secondary sources to be found.

Ribeiro (2009, p. 44), groups sources of information into: **external personal sources** – workers from other companies, specialists, clients, competitors, consultants, brokers, partners, fairs, congresses or lectures (face-to-face or telephone interaction); **personal and internal sources** – organization workers, hierarchical superiors, partners (face-to-face or telephone interaction); **electronic personal sources** - email (personal or company), forums, web discussion groups, Messenger, Skype and the like; **external impersonal sources** - documents produced outside the company, such as magazines, newspapers, books, reports, technical journals, regulations, government publications, radio or television broadcasts; **internal impersonal sources** - documents produced within the company, such as reports, studies, memos, paper files and work notes; and electronic **impersonal sources** - electronic documents in general, intranet, company electronic databases, company website, online commercial and government databases, various Internet sites, news portals. With the increase in the number of users internet services and access, digital platforms become an indispensable source of information.

Brum and Barbosa (2009, p. 60) divide information sources on the Internet into various sectors, that is, there are many ways to have access to information over the Internet, such as: mailing lists, e-mail (e-mail), information via e-mail (newsletter), commercial information via e-mail marketing, virtual chat rooms, instant messengers, search sites or search tools, intranets, extranets, and the sites themselves available on the web. Tomaél et al. (2004) define ten criteria involving quality perceptions of information sources on the Internet: identification information, consistency of information, reliability of information, font adequacy, internal links, links ease of use, font layout, perceived restrictions, and user support. Eppler (2006) states that the problems involving the quality of information are: information overload, misinterpretation of signals and information and misuse of information

The Importance of Information in Strategic Decision Making

Based on the information economy, McGee and Prusak (1994) claim that competition between organisations is based on their ability to acquire, treat, interpret and use information effectively. The organizations that lead this

competition will be the big winners of the future. Le Coadic (2004, p. 38) states that using the information is working with the information resource to achieve an effect that meets a need for information. It is noteworthy that the use of information can contribute to the development of innovations in products and services in organizations.

Petró (2008, p. 64) states that the wealth of entrepreneurs and managers is measured by the degree of knowledge it holds through the transformation of information into knowledge. Thus, to ensure the proper use of information, it is necessary to add value and, for this, it is important that the information is in accordance with the context in which the organization is located, which is correct and complete, with wealth of detail and precision, in the appropriate format , available at the right time and in the right place.

According to Straus and Radnor (2004) in the global and interdependent economy there are large flows of information, so information plays an increasingly decisive role in the strategy of organizations and countries for various reasons:

- ✓ Be important in strategic decision-making;
- ✓ Be important to innovate products and services of greater added value;
- ✓ Be relevant to a country's competitive advantage;
- ✓ Be a synergy factor within organizations;
- ✓ Be influential about the behavior of individuals and groups, both inside and outside organizations.

Lesca and Almeida (1994) claim that the information is not yet managed to match its strategic potential. According to the same authors, organizations can be grouped into three groups about information management:

- ✓ Those who generate information as a strategic resource and as a competitive weapon;
- ✓ Those who generate information, but not strategically;
- ✓ Those who are insensitive to the issue of strategic information management and the possible competitive advantages they could achieve.

According to Lesca (1986) it is difficult to affirm what information means to organizations and how this divides information into three types:

- ✓ **Operating information - information necessary for the operation of the** day-to-day life of the organization.
  It is day-to-day supervision and control information for daily transactions; it is repetitive, accurate and formal and is subject to suffering the most varied interpretations on the part of those who use it.
- ✓ **Influence information** - information that influences the behavior of internal agents and external to the organization.
  From this information the managers of the organizations seek to maximize the cooperation / relationship between the agents in favor of the company. It does not have an operational character, but seeks to influence the behavior of employees and external agents, such as motivation for promotional campaigns of products and or services, in order to achieve certain objectives;
- ✓ **Anticipatory information** – information that allows organizations to detect changes (discontinuities) in advance (socio-economic, political-legal, technological, environmental and others), enabling it to gain advantage or avoid risks.

It is information related to the evolution of the surrounding environment (long-term concerns) and that little or no relationship has with everyday activities (products and or services offered to the market). Anticipation information (weak and strong signals) can take various forms, from rumors, to rumors, to articles of scientific character, etc.

It can be fragmented, of great uncertainty and characterized by ambiguity and lack of clarity. Rarely is the information of anticipation complete and clearly defined and, it is common that it is associated with unsystematic things, inserted in a context surrounded by uncertainties. Anticipation information can be produced by social, environmental indications called weak and or strong signals.

The Pertinent Information andCharacteristics and**"Anticipation"**

Being well informed means much more than having a significant amount of information: it means having relevant, interesting, useful, selected information (Freitas and Janissek-Muniz, 2006). To this end, predisposition is fundamental, pro-action, attention to the surrounding environment of organizations, seeking to listen and know the market, anticipate movements, observe needs and expectations (whether declared or implied) of the market. Quantity is not what is sought, but rather to privilege attention, speed, selectivity and quality of information, which needs not only to be perceived, but also collected, interpreted and disseminated.

The relevance of information can be defined from a series of criteria or characteristics that will cause ainformation to be considered useful (Freitas and Janissek-Muniz, 2006): what type of information? What information? What do you privilege? How to find her? Information for what and for whom? Information obtained where? Why "this" information? Information obtained how? Information obtained when? Information delivered when? Information to do what? Information for decision making, or decision by information?

How to select the relevant information? In complex and turbulent surrounding environments, it is not enough for information to be interesting if it is not known, updated, accessible and mainly with an anticipatory sense. The surveillance of information for strategic decision-making favors the idea of anticipating and detecting changes or eventual discontinuities *(ruptures*, radical *changes)*that may occur in the surrounding environment of theorganization. Aguilar, in 1967, had compared the company's surrounding medium to the ship's radar, which could potentially signal about immediate or future events.

The Weak and Strong Signs

Ansoff (1975) introduced the theme of weak signals with the purpose of identifying possible discontinuities, threats and or opportunities from the global and immediate surrounding environment, in advance. In view of economic, socio-political, technological instability. Ansoff (1975; 1984) maintained that strategic planning based only on quantitative, logical, historical and trending data did not address discontinuities and strategic surprises. In an increasingly turbulent universe, the very notion of planning, as a *prior goal*, becomesunadopted, so the ability to react and adapt to changes in the surrounding environment is decisive and thus moves from planning to strategic management.

In the economic theory the considering the perception of the surrounding environment by managers was successively guided by the function of the information leading to the corresponding anticipations and the underlying beliefs. In management theory these same concepts were little introduced and acquired around the strategy, since the surrounding environment is formed by other "actors" acting in a similar way. The belief of managers is increasingly formalized in the help of cognitive sciences, as well as in epistemic logic (hierarchical beliefs) and cognitive psychology (review of beliefs).

Information exchanges between managers are also studied together with cognitive sciences, as to the coordination they allow (distributed cognition) and the dynamics they induce (learning process). By deepening the definition of weak signs, Lesca and Blanco (2002) consider aspects that characterize these signs, which were resumed and detailed later by Janissek-Muniz, Freitas and Lesca (2007) and Lesca and Lesca (2011) according to Table 1.

Table 1: Weaknesses Characteristics

Weak signal characteristics	**Justification for the word "weak"**	**Difference for information used by managers**
Fragmented	The information is incomplete, only a fragment of information becomes available, requiring other information to come to have some sense.	Complete information
Disseminated	Dispersed and mixed with various useless information and raw data, which makes it difficult to identify them.	Structured information
Strange / Unexpected / Amazing	Unusual information, with unexpected appearance, unfamiliar. Found probably by chance.	Usual, family-friendly information
Ambiguous	A weak signal information does not speak by itself (or, on the contrary, very ambiguous). Many interpretations can be performed. It does not have an obvious cause link. It's unclear, ambivalent, misguided.	Clear information
Unnoticed utility (weak or null)	No obvious and/or apparent connection with a current concern. The same information can be strongly intersive to one person and totally without apparent interest to others. A weak signal is apparently devoid of operational significance.	Information indispensable to carry out a task, or solve a problem
Not too visible, difficult detection	A weak signal remains easily unnoticed: concealed, hidden, sunk in a quantity of data that confuses. Hardly detectable. The detection of a weak signal is not only in the search for information, requires skill and learning to perceive it.	Information requested by the decision / user
Random / Unpredictable	A weak signal doesn't show up when you need it. It appears randomly, unforeseen.	Repetitive information
Miscellaneous formats	A weak signal assumes several formats: writing, drawing, photography, sound, dialogue, smell, taste, etc.	Information with invariable presentation

Source: Adapted from Janissek-Muniz, Freitas and Lesca (2007) and Lesca and Lesca (2011).

The qualification of weak signals is related to the intensity of the signal: weak. If, on the one hand, there are signs categorized in this way it is because there are also more intense signs, the strong ones, which according to Ansoff (1984) are visible and concrete information that allows impact assessment and, the design of plans and actions.

According to Ansoff (1975) a signal strengthens as information becomes more specific. This implies, according to Mendonça, Cardoso and Caraça (2012), a notion of distance from the event or surprise being flagged (a). Weak signals differ from strong signals because they are less visible and because they have a greater distance

from the impact of future changes. Strong signs emerge whenever there is strong evidence of change, whose identification can also be perceived through a group of related weak signals.

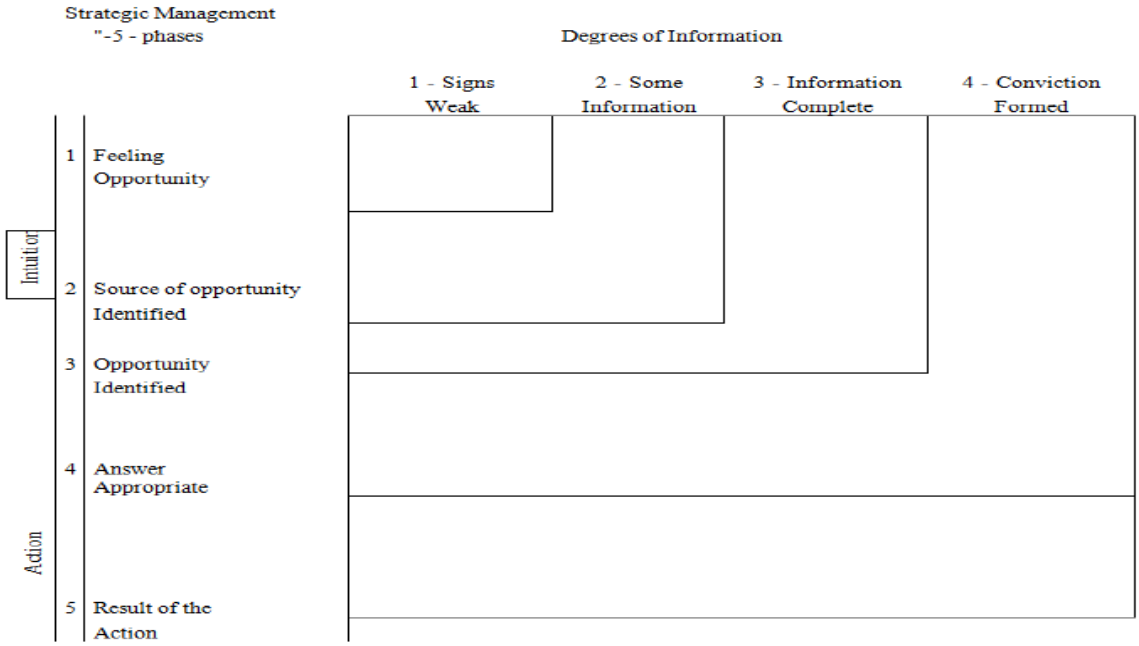
It is important to highlight that the authors do not suggest irrelevance of strong signals for strategic decision making. Lesca and Lesca (2011), as well as Mendonça et al. (2012), only highlight the strategic importance of weak signals, or rather the importance of what weak signals can incite, boost, warn and anticipate; beyond the dangers inherent in ignoring them, leaving little or no time for decision or action, and may have negative consequences for the continuity of the business.

Mendonça et al. (2012), and Lesca and Lesca (2011) claim that an isolated weak signal is not significant. The value of weak signals is the result of a process of interaction between the observer and what is observed, that is, it is dependent on the perspective of each one. Therefore, a weak sign can be relevant to some, while for others it is completely despicable, hence the need for an interpretation or creation of meaning from them, especially if performed collectively.

In order to highlight the importance of what weak signals can stimulate, Lesca and Lesca (2011) cite possible results from the interpretation of weak signals: a new product or a new use for an existing product; a new potential customer; a new potential supplier; a new competitive potential for those who need attention needs to be directed; a new potential partner; new technology, which can result in opportunities or threats. In practical terms weak signals can be compared with the faint and distant clouds that may dissipate or on the contrary may approach the place where we find ourselves and turn into more charged clouds (strong signs) that may cause heavy rain (quantifiable information), floods, *tsunami*, etc.

Ansoff assigns *weak signals* an anticipatory character. According to the author, weak *signals* are elements that can awaken, in the attentive and sensitive strategic decision-maker, a sense that something important seems to be starting or may happen (discontinuities / opportunities and or threats) in the relevant surrounding environment of the organization. It should be noted, however, that the intuition in this case is activated by information that will have been perceived and examined closely. Ansoff calls this "*graduated response through amplification and response to weak signals", and* that can be observed in the following figure:

Figure 1: Degrees of Information



Source: Adapted from (Lesca and Blanco, 2002): in: Janissek-Muniz, R.; Lesca, H.; Freitas, H. Development of the ability to anticipate the identification and capture of anticipatory indications in the context of Anticipatory Strategic Intelligence. In: 4th. IFBAE Congress of IFBAE, 2007, Porto Alegre. Anais of the 4th IFBAE - CONGRESS of the IFBAE, 2007

According to Kärkkäinen et al. (2001), regarding the anticipation of future and hidden needs of customers, states that they have difficulty recognizing and interpreting weak signals, so it is necessary to develop specific methods for training detection and use of weak signal information. These expressions allow us to show that the notion of weak and strong signals, although devoid of greater definition and operational criteria, raises interest both in the midst of academic research and in the professional context. From ignorance, weak signals are often misunderstood by managers and entrepreneurs, and may even cause nonsense.

The word "weak" is misunderstood and leads some managers to error. In fact, a signal can be weak by its appearance and understanding, but potentially very strong in the sense that it can identify something very important (opportunities and or threats) for the organization that is able to capture and interpret them. According to Ansoff (1975), Blanco (1998), Lesca (2001) and Lesca and Blanco (2002), a signal can be qualified weak when it has the following characteristics, because it is:

- ✓ **Fragmented** - means that we do not have complete information, we only have a fragment of information from which it is possible to predict something. Weak signals usually exist in small quantities.
- ✓ **Disseminated** – it is mixed with useless information that prevents its identification. A weak signal has poor visibility. It goes unnoticed to most people.
- ✓ **Meaning** - seemingly weak and ambiguous. A weak signal information says little by itself, it is very ambiguous, unclear, ambivalent, misguided.
- ✓ **Unexpected** - not expected, unfamiliar, unrepetitive and, therefore, may not be perceived. The non-familiarity feature of information makes it more difficult to distinguish it.
- ✓ **Of apparent weak utility** - the same information can be strongly interspersed to a manager and totally without apparent interest to others, even if they are part of the same industry/sector. A weak signal is apparently devoid of operational significance. Its usefulness does not "jump to the eyes", and the consequences of the phenomenon evoked do not happen by themselves.
- ✓ **Difficult detection** - poor identification. In metaphorical terms, it can be said that a weak sign "easily escapes between the fingers".
- ✓ **Relevance** - weak, that is, it is not known what information relates to this sign, or how to classify information in relation to the concerns and current activities of the organization.
- ✓ **Reliability** – an apparent sign "usually announces" a future, subjective, potentially wrong, and unverified event (opportunity and or threat).

Weak signs are the central point of anticipating strategic decision-making, due to their potential relevance and usefulness for prepared managers with appropriate cognitive style, since according to Ansoff (1975), this type of information may contain assumptions of ruptures (discontinuities), opportunities and or relevant threats (competitors, customers, suppliers, etc.).

The Weak Signals Versus Clues / Anticipatory Alerts

The word 'sign' according to the signal theory described by Shannon and Weaver (1949) would apply to Ansoff's weak signals, which would allow the possibility of establishing exhaustive lists of signals, which would be possible to identify communication channels to be and define the limits of receptivity from which one should be alert. This analogy would be dangerous, as it would lead to the priority criteria for selecting poor ly-appropriate signals (Lesca and Blanco, 2002).

The criteria of Shannon and weaver signals, such as trust, sufficiency, completeness, controlability, etc., are not usable in the case of The Weak Signs of Ansoff, so we are faced with a situation where we do not know in advance what the signs and what sources of information are. Thus, we focus on our interest only on the signals, that we can obtain pertinent and anticipatory information, so we speak on **the anticipatory indications / alerts**, which do not have an immediately evidentmeaning, on the contrary, their meaning is constructed during their interpretation. By interpreting a weak signal, we have the possibility to reach the "Anticipation Clues/alerts".

"Indication/ anticipatory alert" is information whose interpretation allows us to think that an event likely to have great utility and a major impact on organizations will be to occur (discontinuity, opportunity and or threat). Such indications may originate from two main sources: documented sources (databases, publications, internet, etc.) and relational sources, as well as informal or formal sources, internal or external.

According to (Leszczynska and Lesca, 2004) information of relational origin is often accessible mainly by employees with activities external to organizations, although the internal collaborators of organizations, through their relationships and their contact with the surrounding environment (customers, suppliers, competitors, researchers, meetings, congresses, fairs, seminars, etc.), may also be fit to do so and attentive to informal, qualitative, subjective information, etc.

The Strategic Surprises

According to Ansoff (1975) managers prefer strong signals and quantitative information in strategic decision making, but suddenly discover that they have missed an opportunity or that the product line is threatened with survival. In these situations, managers face unfamiliar, unpredictable, sudden and threatening events, which can

be called strategic surprises. The surprises (discontinuities, opportunities and or threats) are heralded by indications/ alerts or weak signs of the immediate surrounding environment (industry/sector) and or global that the author defines as fragmented information and that when used in strategic decision making are not accurate enough to ensure a comfortable level of certainty.

This definition shows us a paradox about the use of this type of information in strategic decision making aimed at anticipating "surprises". A strategic decision-making based on complete and accurate information would miss the opportunity. If the context of the decision is immersed only in information characterized as weak signals, managers may face two conflicting situations: either make the decision based on this information (weak signs, indications/ alerts), at a strong risk of error, or expect to gather more information, at a strong risk of losing the right time (opportunity or threat) for decision-making.

According to Lesca (2003), a weak signal is characterized by information in relation to which there is fragility pertinent to its integrity, visibility, meaning, familiarity, perceived utility, relevance and reliability. Although weak signals suffer from these weaknesses and apparently lose importance, they may be useful in formulating anticipation information, provided that an adequate amplification treatment can be given to these signals. In this case, signal amplification is the process by which undesirable information (noise) is filtered and, eventually, some weak signals are associated with others.

The choice of anticipation has a theoretical and practical consequence regarding the type of information that interests us. This is information containing, themselves, an anticipatory character: they should indicate clues of trends about the future, not about the past or present. And more specifically, they should constitute early manifestations of possible ruptures or discontinuities. It is in this context that Ansoff used the expression *Weak Signals* (1975).

The Organizational Knowledge

To understand how managers use information, and about the surrounding environment, in support of strategic decision making and learning, it is necessary to look at the surrounding environment in terms of information, research and use needs, that is, in terms of insight , creation of knowledge and strategic decision-making process.

- ✓ **Insight – is** induced by changes in the surrounding environment that create discontinuities in the experience flows of people and the activities of organizations. These discontinuities are the signs (weak and strong) that have to make sense. Organizations then create the market(s) through the experience and innovation of new products (Weick, 1979, 1995).

  The recipe of insight is the interpretation of the surrounding environment through the sequence of innovation, selection and retention. In innovation people create the market in which they want to compete, based on their experience in interpreting market signals. In the selection people choose from among the possible interpretations of those closest to their experience. In retention, organizations successfully store product knowledge, based on the interpretation of market signals and accumulate experience for future situations (Weick, 2000).

  Organizational acumen can be guided by the belief of managers or actions. In the process of guided belief, people start from an initial state of belief that is sufficiently clear and plausible and is used as a node to acquire more and more information within meaningful structures. People can use beliefs as expectations to guide the choice of plausible interpretations or to argue about their beliefs and relevance when these beliefs conflict with current information. In the guided action process, people start actions and grow in their knowledge structures, through the modification of structures, in order to give meaning to actions. People can create meaning to justify the actions they trust or can create meaning to explain actions they have taken previously.
- ✓ **Knowledge Creation – Organizations have** three types of knowledge: tacit, explicit and cultural.
  - **Tacit knowledge** is personal knowledge, used by members of organizations to perform their work. It is the object of learning through the experience of the work done, during which they develop skills and abilities to make judgments about the success or not of the activities.

    Tacit knowledge is experimental and contextualized and cannot be easily coded, written or reduced to rules and recipes. This knowledge is vital for organizations because it is an important source of new knowledge, discoveries and innovations that are the result of individual creation, applying their knowledge and intuition to address problems.
  - **Explicit** knowledge is knowledge that is formally expressed using a symbol system and can be easily communicated or disseminated. This knowledge can be based on objects or norms. Knowledge is based on objects when it is represented using a set of symbols (e.g. documents) or is soaked in physical entities (e.g. equipment, substances).

    Knowledge is based on standards when it is used, is encoded in standards, routines, or operative procedures. Explicit knowledge encoded as an intellectual asset is available to organizations, because it

helps the observation of organizations and the storage of knowledge and is acquired mainly through information almost always by formal education (Choo, 2002, Silva, 2003).

- **Cultural knowledge** consists of the beliefs and traditional values of organizations and is based on experience, observation and reflection about the surrounding environment. In addition, organizations develop the sharing of beliefs and values, about the nature of their main businesses, capabilities, markets, competitors and others. These beliefs and values form the criterion for the selection of alternatives, new ideas and to evaluate projects and proposals.

In this sense organizations use cultural knowledge to answer questions such as, "What kind of organization are we?", "what knowledge will be valuable to the organization?", "what knowledge is worth pursuing?" Cultural knowledge includes assumption, beliefs and values that are used to describe and explain reality, as well as the criteria and expectations that are used to give value and meaning to new information (signs).

Organizations create knowledge through people; tacit knowledge develops creative acumen and sharing; explicit knowledge develops new products and innovations (Nonaka and Takeuchi, 1995).

Tacit knowledge is shared and outsourced through the dialogue that is used in metaphors and analogies. New concepts are created, concepts are justified and evaluated according to organizational intentions. The concepts are tested and used in the creation of prototypes. The concepts that have been created, justified, and modeled are transferred to the other levels of organizations to generate new cycles of creative knowledge.

The strategy is concerned with tuning on the one hand of what is worth of organizations and on the other of what is outside them. The quality of this tuning is limited by the **quality of the strategic information** with which it is fed, so the main function of strategists is the "*survey*" of the surrounding environment in order to detectthe changes, analyze and interpret them, in terms of the performance potential available to the organization (opportunities). This is a complex process, based on information and or signs (weak and strong) both objective and subjective. The result is the objective perception of the reality of the surrounding environment, a set of beliefs (performance expectations) about what will happen, that is, the performance that managers believe is possible to achieve (Ansoff, 1990).

There are two sources of **strategic information** that contribute to expectations. One source is internal information on capabilities and competences (often called strengths and weaknesses) to address aspects not characterised by the perception of the future surrounding environment, i.e. enabling:

- ✓ the transformation of industry and or the sector;
- ✓ Increase results through new niches beyond market share;
- ✓ Equip the organization of a **Strategic Architecture** – dream of what you can do with knowledge and known resources;
- ✓ Designing the strategy as an overtaking, rather than an adaptation of ambitions to the surrounding environment;
- ✓ Gain progress on competitors, in the dissemination and marketing of products;
- ✓ Target leadership in key business skills.

The second source is the surrounding environment that provides information (weak and strong signals) about changes and complexity. When the changes are significant it is "important to be informed about the enemy and the place of battle, which allows to obtain advantages of the first one who moves, that is, the one who occupies the battlefield first and awaits his enemy is at ease; who then arrives at the scene and rushes to fight is tired" (Sun Tzu, 1971). This source of information allows the organization to seek to shape the future; however, intentions can be frustrated by chance and ignorance (Clausewitz, C., 1989).

In small organizations the process is informal, the manager observes, estimates and judges at the same time and does not clarify the sequence and interaction between the various elements. The main element is the **strategic culture** of the manager, which determines both the time perspective in which he perceives the surrounding environment, as well as the alternatives he accepts as credible. Culture acts as a lens or preceptive filter, which, in turn, establishes the premises of managers' decisions (Snodgrass, 1984).

If the time perspective coincides with the time horizon required by the speed of change and complexity of the surrounding environment, it means that the manager's perspective is in line with the turbulence of the surrounding environment. If the manager's time perspective is less than the speed of change we have a short-sighted perspective, otherwise we have a strong outlook. A short-sighted perspective is the result of the poor quality of strategic information and the manager will have inaccurate performance expectations. The advantage of a pretitous perception allows the manager to perceive the trends of turbulence of the surrounding environment and thus avoid surprises, predict and react to threats and opportunities (Ansoff, 1990).

There are other factors besides culture that contribute to the informally formulated expectations, such as the limited power of observation of the surrounding environment, the limitations of the organization, knowledge and the experience of managers. In stable and reactive surrounding environments intuition and experience are useful but become inadequate in environments characterized by anticipation and exploration/creation.

The surveillance of strategic information (collection, selection, treatment and analysis) can be carried out by specialized technical teams that then submit to decision-makers the alternatives for strategic decision-making

and or by the managers themselves. The formal process is explicit and sequential. The perceptions are elaborated by technical teams and or managers, and then converted into visions by managers.

Formal forecasting is subject to the same limitations inherent to the informal process, i.e., it is limited by the filter of the prediction of the methodology used to make the predictions. In stable competence, experience is entrusted and no "poll" or formal forecast is carried out. Reactive competence formally extrapolates past performance. The competence characterized by anticipation incorporates the extrapolation of formal performance (Ansoff, 1978).

These approaches assume that the future will tend to be a natural extension of the past and are unable to perceive significant changes as well as possible discontinuities. The competencies characterized by the question and creation use techniques that predict probable deviations from the past. However, they capture some information about the potential future.

Thus, the technology used for prevention interposes a filter between the decisors and the surrounding environment. A myopic filter that is narrower than the turbulence and complexity of the surrounding environment will present inaccurate information to the manager. A tuned filter will adequately reflect the surrounding environment as long as the turbulence level is stable. A foresighted filter will make a prediction of changes in turbulence (Ansoff, 1978).

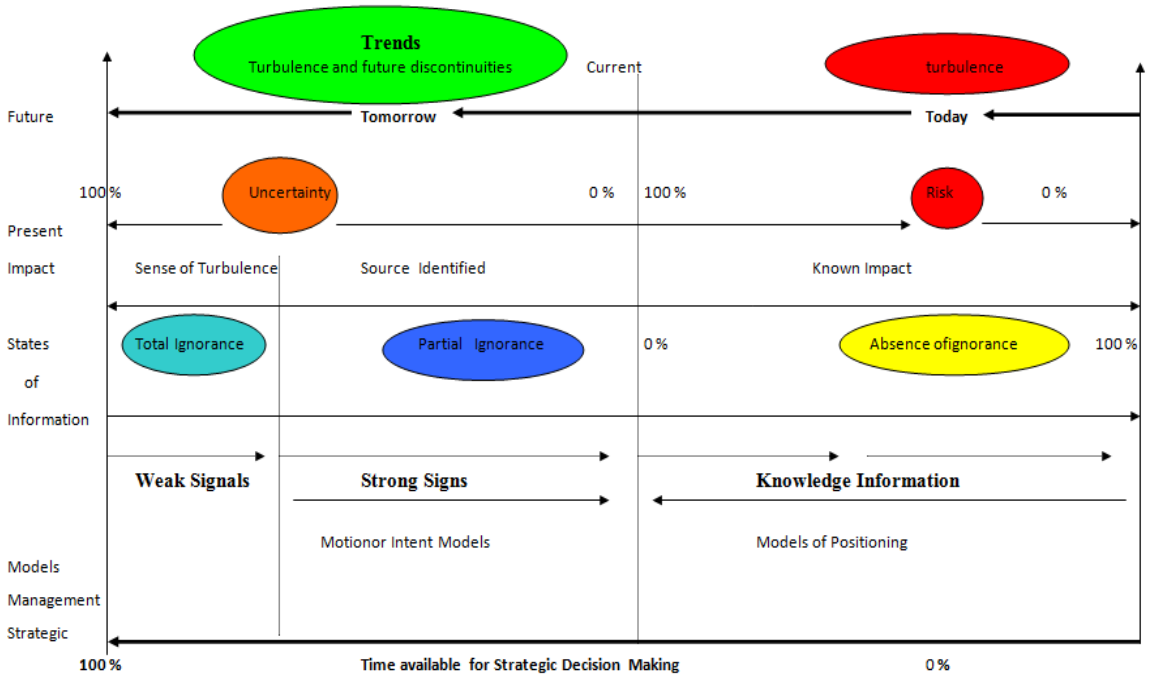
The tuning filter with the surrounding environment is used through the cultural perspective of the makers. If the filter of cultural perception is narrower than the forecast filter, the manager further restricts the perception of the surrounding future environment, rejecting as inaccurate or irrelevant information that is inconsistent with his experience.

The accuracy of an organization's performance expectations is limited either by the forecast filter or by the perception filter, depending on which of the two is the narrowest. When the narrower filter excludes important engaging environment trends and likely events, performance expectations will be inaccurate, regardless of computational refinement and forecasting methodology.

Knowledge and awareness of expectations whatever their quality is, is restricted to a small number of participants who are the best informed about the environment and or about the distinctive capacities and skills of organizations. Usually the most numerous groups of managers who deal with internal operations, little care about what will happen to the organization, so they have little knowledge of what their future will be.

The communication opportunities for important strategic information to managers are considerably higher in large organizations than in small and medium-sized organizations. However there are some limitations. One is the limitation of forecasting systems, which slows down organizational awareness with regard to the main changes in the surrounding environment. Another is the limitation of information to "strong signals", which deprives the organization of a timely warning of changes (weak signals) that develop rapidly.

Figure 3 - Model for The Operationalization of StrategicInformationManagement.



The Operationalization of the Strategic Information Management Model

We will propose a model for operationalizing strategic information management based on research. There is an over-reflection on the models of formulating the strategy that are fixed on what managers should do and how they should respond, when the intervention initiative has already occurred. We learn within the organization that an important ingredient for the success of strategic management is the effort that begins long before in the sense of preparing, training and motivating people about the process of formulating the strategy based on a previously defined model. Preparatory work outside the organisation is at least as important as the other, if we want the environmental demands on strategic decisions to be **better informed**and reasoned, more sympathetic to the business system and more balanced about the impact on the company's future options.

What should be done by managers in order to gain awareness of the dimensions of strategic problems affecting people and businesses? What should be done in order to achieve a higher level of knowledge and greater mastery of the problems faced by society and managers who make strategic decisions? How can the levels of trust and credibility between the company and stakeholders be established, levels that the company today knows should establish between managers and employees?

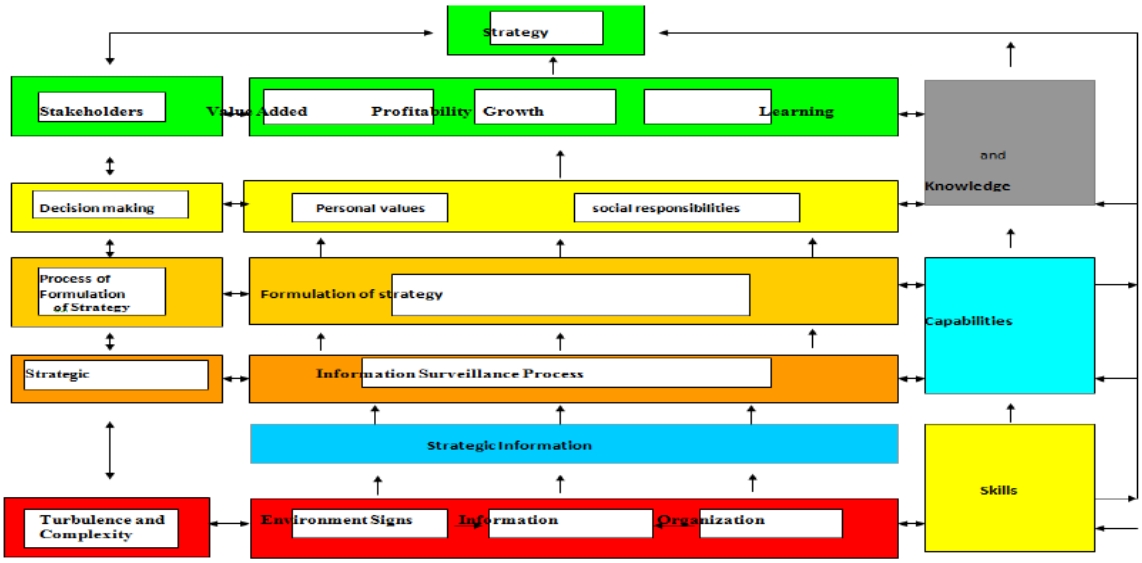
The answer to these questions challenges the traditional way of managing, so it is necessary to better perceive reality and capture this perception, in order to increase human understanding of the tremendous complexity that is the real world. One approach to understanding the real world is to identify, within it, **the strategic information** that corresponds to the future perspective of trends in the surrounding environment. A second element of the approach is to make managers understand that using better **information** in supporting strategic decision-making can reduce risk, uncertainty and the lower likelihood of failure. This method is an empirical heuristic that has been proven through an experimental verification process, since the information and knowledge society is becoming progressively turbulent and interconnected and its problems become increasingly complex and give rise to new models of approach to complexity.

Addressing the complexity of strategic problems has important systemic properties, since reducing the complexity of problems is a reflection of the recognition that the complexity of the real world is often greater than the human capacity to complexity and therefore the synthesis of complexity compensates for the limited rationality of the human brain. The systemic approach focuses on the nature of relationships and interrelations between key information, so no matter what the complexity of the strategic problem is, it is usually possible to identify a small number of strategic information that determine the basic configuration of the solution. The surrounding environment determines the modes and conditions of behavior necessary for the survival and achievement of the aspirations of organizations, so success depends on a two-way alignment:

- ✓ Information about its behavior in the surrounding environment and information on the conditions of success in the surrounding environment (opportunities);
- ✓ Information about your behavior and information about your internal configuration (skills and capabilities).

Managers should be prepared to respond to the challenges of the increasingly competitive, changeable and unstable environment. Responding to this broader vision of strategic intervention means new efforts to create a process of monitoring strategic information on the environment, in order to identify in advance the future possibilities of the organization . Figure 4 shows a proposal to operationalize the Strategic Information Management model.

Figure 4 - Model for The Operationalization of Strategic Information Management



Final Considerations and Clues for Further Investigations

Weak signals are thus called not because of lack of importance, as the name may suggest, but because of the difficulty in their capture. Their identification is difficult because, among other things, they are easily overshadowed by other factors, such as: preconceived ideas, routine attitudes and behavior bias on the part of people involved in planning and forecasting activities. Weak signals can be valuable if you can identify your potential for assistance in anticipating situations that set up opportunities or threats. They are easily identifiable signs *a posteriori*,when a certain situation of this nature is fully established, but if they are not given adequate treatment, they are hardly perceived a *priori.* As a metric to assess the uncertainty and complexity of the surrounding environment we can look at the perception variable. Several studies have operationalized the perception of the uncertainty of the surrounding environment through subjective measures to answer questions about the complexity of perception, frequency of change and importance (Daft, Sormunen and Parks, 1988, Boyd and Fulk, 1996, Choo, 2002).

Managers manage people beyond other resources - including **information**that is subject to **filtering cognitive abilities** and the "game" of influences and alliances. The definition of the strategy can take the form of a **perspective** rooted in collective intentions and that reflects the patterns of resource utilization and capabilities as a *competitive advantage.*The information tends to be a *"substance"* likely to be acquired, stored and possessed.

In the process of formulating the strategy, strategists tend to place greater emphasis on social and cognitive processes – the process requires creativity and synthesis, exactly what the formalization of positioning discourages; The strategy when it is guided by supply and not by demand tends to be defined for a period of x years with periodic reviews. Managers actively exploit the imperfections of information through product and market factors to achieve [2]***competitive advantages.***

The process of monitoring strategic information includes, among others, the following aspects:

- ✓ **Being systematic and ethical – it** should not be based on unethical actions or just be a process of answering specific questions;
- ✓ **Being formalized and evaluated permanently** – without formalization becomes a sporadic and unimportant process within organisations; requires a permanent assessment to verify its effectiveness and efficiency for organizations;
- ✓ **Having the necessary resources (human, material and financial)** – the information to be collected and analyzed aims to identify business opportunities and threats; without clear objectives and appropriate means will be a waste of time and resources.

The process of monitoring strategic information (weak, strong signals, quantified information) includes from others the following surveillances:

- ✓ **Social surveillance** – information on sociocultural and environmental changes and trends, such as information on social infrastructure, labor and its qualification, security in the region, growth or demographic decrease, population age distribution, life expectancy, career expectations, lifestyle changes, etc.;
- ✓ **Economic surveillance** – information on the evolution of the economy (local, regional, global), such as financing, taxes, interest rates, unemployment rate, inflation rate, wages, prices, exchange rates, etc.;
- ✓ **Technological surveillance** – information that may affect the business about the technological point of view, such as information on new technological advances and advances in its transfer to the market, etc.;
- ✓ **Political surveillance** – information that could affect the business from the political point of view, such as the economic, fiscal and labor policy of the government.

A timely response to changes is only possible if changes are perceived before formulating the strategy, that is, responding to the signs (weak and strong) produced by a change in the initial state of their development. This presupposes that organizations have the skills necessary to deal with this information to initiate the response or have the perception of the need for strategic decision-making, by identifying the opportunity(s) (phase of discovery).

As for the strategy formulation process there are some practical implications in that in schools of strategic adequacy, the strategy is defined from the outside inand the process is ensured by the "analysts" who take the proposals "on a tray" (s) strategic decision-maker (s) and bring strategic decision (strategy). The brains of these "analysts" and strategists are limited to their cognitive abilities to "discover" all the changes in the surrounding environment. Moreover, the information on which "analysts" are based is the (quantitative) information about past performance, by extrapolating the known information.

In the models of schools of motion or strategic intent, the strategy is defined from the inside out, that is, the strategy is the result of the use of the resources of organizations in one way or another, to achieve and maintain competitive advantages resources (human, material, technological or financial) that are difficult to buy or imitate and are therefore rare, resulting in an above-average return.

Regardless of the model adopted by organizations to formulate their strategy, the concepts of strategic information and strategic information surveillance can be used in the process of formulating the strategy. However, the profitability of strategic information implies the active exploitation of the imperfections of information of product and market factors, but whose identification is dependent on the cognitive abilities of "analysts" and strategists.

The observation/ surveillance of strategic information is an open and unoriented attitude, that is, it seeks to identify discontinuities, opportunities and threats. Systematic strategic information research (weak and strong signals) actively seeks business opportunities. Both consume time; this is the knowledge of strategists (observers, vigilantes, analysts" and makers); knowledge is more complex than information, but there is no knowledge without information.

The available time of managers for strategic decision-making is inversely proportional to available information and knowledge; recourse to the process of observation and surveillance of strategic information (weak, strong signals) allows them to increase the time available for strategic decision-making. "He who occupies the battlefield first and awaits his enemy is at ease; who comes to the scene and rushes to fight is tired" (Sun Tzu, 1971);(Porter, 1980).

[1]The distinction between definition and perception - definition is what characterizes the defined phenomenon, while perception (concept) is the process of looking at the phenomenon. Accepting the idea of perception, it is easy to look at the usefulness of perception more rightly than universally true definition (Belkin, 1978, p.58)

REFERENCES

[1]. Andrews, K. R. (1987). The concept of corporate strategy. Homewood: Irwin.

[2]. Ansoff, H. Igor (1990). Strategic Management. The Macmillan Press, London.

[3]. Ansoff, Igor & Edward Mcdonnell (1990). Implanting Strategic Management. Prentice Hall International, New Jersey.

[4]. Ansoff, H. I., (1985), Conceptual Underpinnings of Systematic Strategic Management. European Journal of Operational Research, v. 19, n. 1, p. 219.

[5]. Ansoff H. Igor, (1984). Implanting Strategic Management, Prentice-Hall International.

[6]. Ansoff H. Igor, Declerck, R. P., & Hayes, R. L., (1979). From Strategic Planning to Strategic Management, John Wiley.

[7]. Ansoff, Igor (1978). Strategic Management. The Macmillan Press, London.

[8]. Ansoff, H. I., Declerk, R., & Hayes (1976). From Strategic Planning to Strategic Management, John Wiley & Sons.

[9]. Ansoff,H. I., (1975), Managing strategic surprise by response to weak signals, **California** Management Review, 18(2), p.21-33.

[10]. Ansoff, H. I. (1965). Corporate strategy – An analytical approach to business policy for growth and expansion. New York: McGraw-Hill.

[11]. Auster, E.; Choo, C. W., (1994), How senior managers acquire and use information in environmental scanning. InformationProcessingand Management, v. 30, n. 5, p. 607-618.

[12]. Barbosa, R. R., (2011), Inteligência empresarial: uma avaliação de fontes de informação sobre o ambiente organizacional externo.

[13]. Barney, J. B., &Arikan, A. M. (2001). The resource-based view: Origins and implications. In: M. A. Hitt, R. F. Freeman & J. S. Harrison (Eds.), Handbook of strategic management (pp. 124-188). Oxford: Blackwell.

[14]. Barney, J. B. (1999). «How a Firm's Capabilities Affect Boundary Decisions». Sloan Management Review (40:3), pp. 137-145.

[15]. Barney, J. B. (1991). «Firm Resources and Sustained Competitive Advantage». Journal of Management, 17 (1), pp. 99-120.

[16]. Barney, J. B. (1986). «Strategic Factor Markets: Expectations, Luck and Business Strategy». Management Science, 32 (10), pp. 1231-1241.

[17]. Bergeron, P. (1996), Information resources management. **Annual Review of Information Science and Technology**, White Plains, v. 31, p. 263-300.

[18]. Blanco, S., (1998), **Gestion de l'information et intelligencestratégique: cas de la selection des signes d'alerteprécoce,** Thèse de doctorat en Sciences de Gestion, Univ. de Grenoble 2, 308 p.

[19]. Boyd, B., Janet Fulk, (1996), *Executive Scanning and Perceived Uncertainty: a Multidimensional Model*, Journal of Broadbent, M. &Kitzis, E. S. (2005). The New CIO Leader. Setting the Agenda and Delivering Results. Harvard Business SchoolPress, Boston, Massachusetts.

[20]. Brum, M.A. C.and Barbosa, R. R., (2009), Comportamento de busca e uso da informação: um estudo com alunos, Heidelberg, Springer.

[21]. Carvalho, F. A., (2011), **Criança, a alma do negócio**. 2011. 114f. Dissertação (Mestrado em Administração) - Fundação Pedro Leopoldo, Minas Gerais.

[22]. Castells, M. (1996). The rise of the network society, the information age: economy, society and culture. Vol. 1, Cambridge, Blackwell Publishers.

[23]. Chan, S. Y. & Foster, J. M. (2001). «Strategy formulation in small business». International Small Business Journal, 19(3), 56-71.

[24]. Chandler, A. D. (1962). Strategy and structure. Cambridge u.a.: MIT Press.

[25]. Choo, C. W. (2009) Information use and early warnings effectiveness: perspectives and prospects, *Jornal of The American Society for Information Science and Techonology*, 60(5), 1071-1082.

[26]. Choo, C. W., (2006), The knowing organization: how organizations use information to construct meaning, create knowledge, and make decisions. 2. ed. New York: Oxford University Press.

[27]. Choo, C. W. &Bontis, N. (Ed.) (2002). The Strategic Management of Intellectual Capital and Organizational Learning. Oxford University Press, Oxford, UK.

[28]. Choo, C. W. (2002), *Environment Scanning as Information Seeking and Organizational Knowing* PrimaVera Working Paper 2002-01, University van Amsterdam.

[29]. Choo, C. W. (2002), *Information Management for the Intelligent Organization: The Art of Scanning the Environment*, 3ª edição, Medford, NJ: Information Today, Inc.

[30]. Choo, C. W. (1998), *The Knowing Organization: How Organizations Use Information to Construct Meaning, Create Knowledge and Make decisions*, Oxford University Press, Nova Iorque

[31]. Choo, Chun Wei., (1998), Information management for the intelligent organization: the art of scanning the environment. 2. ed. Medford, New Jersey: ASIS Monograph Series.

[32]. Choo, C. W. (1997), *Organizations as Information-use Systems: A process model of information management.* PrimaVera Working Paper 1997-17, University van Amsterdam.

[33]. Choo, C. W., (1994), Perception and use of information sources in environmental scanning. Library & Information Science Research, v. 16, n. 1, p. 23-40.

[34]. Choo, C. W., Ethel Auster, (1993), *Environment Scanning: Acquisition and Use of Information by Managers*, in: Annual Review of Information Science and Technology, editado por M. E. Williams

[35]. Clausewitz, C. Von, (1989), *On War*, Princeton, NJ: Princeton University Press

[36]. Cooper, A. C. (1979). «Strategic management: New ventures and small business». In: D. E. Schendel & C. Hofer (Eds.), Strategic management (pp. 316-327). Boston: Little, Brown & Co.

[37]. Cunha, M. B., (2001), Para saber mais: fontes de informação em ciência e tecnologia, Brasília, , DF: Briquet de Lemos, p. 168.

[38]. Daft, Richard L., J. Sormunen, Don Parks, (1988), *Chief Executive Scannning, Environment Characteristics and Company Performance: an Empirical Study*, Strategic Management Journal 9 (2), pp. 123-139

[39]. Dahlberg, Ingetraut. (1978) "Teoria do conceito". Ciência da Informação, Rio de Janeiro, v. 7, n. 2, p. 101107.

[40]. Dahlberg, I., (1978), Fundamentos teóricos-conceituais da classificação. Revista de Biblioteconomia, Brasília, v. 6, n. 1, jan./jun. p. 9-21

[41]. DataGramaZero – Revista de Ciência da Informação, Belo Horizonte, v. 3, n. 6, dez. 2002.

[42]. Davenport, E.; Cronin, B., (2000), Knowledge management: semantic drift or conceptual shift? Annual Meeting of the Association for Library and Information Science Education, San Antonio, Jan.

[43]. Davenport, T. H. & L. Prusak (1998). Working Knowledge. Boston: Harvard Business School Press.

[44]. Degent, R. J., (1986), A importância estratégica e o funcionamento do serviço de inteligência empresarial. Revista de Administração de Empresas, v. 26, n. 1, p. 77-83. Jan./mar.

[45]. Drucker, Peter (1999). Sobre a Profissão da Gestão. 1ª edição, Editora Publicações Dom Quixote, Lda, Lisboa.

[46]. Drucker, Peter (1997). As Novas Realidades – no governo e na política, na economia e nas empresas, na sociedade e na visão do mundo. 4ª edição, Editora Pioneira Novos Umbrais, São Paulo, Brasil.

[47]. EconomistIntelligenceUnit (2008). The future of enterprise information governance, The Economist Intelligence Unit Limited

[48]. Figueiredo, N., (1994), Informação para negócios: um novo desafio. In: Congresso Latino-Americano De Biblioteconomia E Documentacao, 2., 1994, Belo Horizonte. Anais... Belo Horizonte: ABMG, 820 p.

[49]. Freitas, H. e Janissek-Muniz, R., (2006), Uma proposta de plataforma para Inteligência Estratégica. Texto indicado ao II Prêmio de Inovação em Inteligência Competitiva da ABRAIC, e recebeu Menção Honrosa. III ENA – Encontro Nacional da ABRAIC. Anais. Congresso Ibero Americano de Gestão do Conhecimento e Inteligência Competitiva**.** 29-31 agosto 2006. Curitiba.

[50]. Fuld, L. M., (1993), Dez maneiras fáceis de monitorar seus concorrentes. In: FULD, L.M. Administrando a concorrência. Rio de Janeiro: Record.

[51]. Godet, Michel (1993). Manual de Prospectiva Estratégica. Publicações Dom Quixote, Lisboa.
[52]. Gottschalk, P. (1999). «Strategic Management of IS/IT Functions: the Role of the CIO in Norwegian Organizations». International Journal of Information Management (19:5), pp. 389-399.
[53]. Goulart, I. B.Piaget, (2011), experiências básicas para utilização pelo professor. 27. ed. Petrópolis: Ed. Vozes.
[54]. Grant, R. (1998). A Resource-Based Approach to Strategy Analysis – A Practical Framework, 3nd ed., Blackwell Business.
[55]. Grant, R. (1996). «Towards a Knowledge-based Theory of the Firm». Strategic Management Journal, vol. 17, Number Winter Special Issue, pp. 109-122
[56]. Hamel, G. (1996). «Strategy as Revolution». Harvard Business Review, 74(4), 69-82.
[57]. Hammersmith,Vygotsky, L. S., (1988), **A formação social da mente:** o desenvolvimento dos processos psicológicos superiores. São Paulo: Martins Fontes, 1988.
[58]. Holopainen, M., &Toivonen, M. (2012) Weak signals: Ansoff today, *Futures*, 44(3), 198-205.
[59]. Jamil, G. and Fernanda Ribeiro e Armando Malheiro, (2013), "Rethinking the Conceptual Base for New Practical Applications in Information Value and Quality", IGI Global, Hershey, USA
[60]. Janissek-Muniz, R., Lesca, H.; Freitas, H., (2006), Inteligência Estratégica Antecipativa e Coletiva para Tomada de Decisão. 3rd CONTECSI - International Conference on Information Systems and Technology Management and 11th WCA - World Continuous Auditing Conference. Anais 3rd Contecsi.31/05 a 02/06/2006 - USP São Paulo/SP.
[61]. Kärkkäinen H., Piippo P., Puumalainen K., Tuominen M., (2001), Assessment of hidden and future customer needs in Finnish business-to-business companies, **R&D Management**, 31(4), p.391-406.
[62]. Kerlinger, F. N., (1980), Metodologia da pesquisa em ciências sociais: um tratamento conceitual. Tradução Helena Mendes Rotundo; revisão técnica José Roberto Malufe. São Paulo: EPU.
[63]. Kobrin, S. J. et al., (1980), The assessment and evaluation of noneconomic environments by American firms. Journal of International Business Studies, n. 11, p. 32-47.
[64]. Kraus, S. (2007). «Strategic Planning in New Ventures and Young SMEs». In: C. Wankel (Ed.), 21st Century Management – A Reference Handbook (pp. 73-81). Thousand Oaks, CA: Sage.
[65]. Le Coadic, Yves F., (1998), Le besoin d'information.Paris: ADBS Editions, 191 p.
[66]. Le Coadic, Yvez-François (1997), La science de l'information. 2 ed. atual. Paris :Universitaires de France.
[67]. LE COADIC, Yves-François., (1996), A ciência da informação. 5. ed. Braslia: Briquet de Lemos, 119 p.
[68]. Le Coadic (1994), La Science de l'Information, Presses Universitaires de France, Paris
[69]. Lesca, H., &Lesca, N. (2011) Weak signals for strategic intelligence anticipation tool for managers, London: ISTE; Hoboken: Wiley.
[70]. Lesca, H., (2003), Veillestratégique: la méthodeL:E:SCAnning®, Editions EMS, Colombelles, França.
[71]. Lesca e Blanco, (2002): in: Janissek-Muniz, R.; Lesca, H.; Freitas, H. Desenvolvimento da capacidade de antecipação pela identificação e captação de indícios antecipativos em contexto de Inteligência Estratégica Antecipativa. In: 4º. IFBAE Congresso do IFBAE, 2007, Porto Alegre. Anais do 4ª IFBAE - Congresso do IFBAE, 2007
[72]. Lesca, H., (2001), Veillestratégique: passage de la notion de signalfaible à la notion de signe d'alerte précoce. Colloque VSST 2001, Barceloneoct., **Actesducolloque VSST**, tome 1, pp. 98-105.
[73]. Lesca, H. (1995) The crucial problem of the strategic probe: the construction of the "puzzle, *CERAG, ESA, série Recherche, 95-02*, 24.
[74]. Lesca, H., (1986), *Systèmesd'Information pour le Management Stratégique de l'Enterprise*. Paris: McGraw-Hill.
[75]. Lesca, H., Almeida, F. C., (1994), Administração Estratégica da Informação. *Revista de Administração*, v. 29, n. 3, p. 66-75.
[76]. Lester, R.; Waters, J., (1989), Environmental scanning and business strategy. London, UK: British Library, Research and Development Department.
[77]. Leszczynska, D. et Lesca, H., (2004), VeilleStratégique :utilité des « informations de terrain » pour la PME-PMI à la recherche de nouveaux débouchésproduit/marché. Etude d'un cas. Cahier de Recherche CERAG(Grenoble) – IAE (Nice), CERAG UMR 5820 CNRS.
[78]. Mafra Pereira, F. C., Barbosa, R. R., (2009), A decisão estratégica por executivos de micro e pequenas empresas e a cadeia alimentar informacional como modelo integrativo de fontes de informação. In: Encontro Nacional De Pesquisa Em Ciência Da Informação - Enancib, 10., João Pessoa, 2009. Anais... João Pessoa: UFPB, p.1113-1131.
[79]. Mafra Pereira, F. C.; Barbosa, R. R., (2008), Uso de fontes de informação por consultores empresariais: um estudo junto ao mercado de consultoria de Belo Horizonte. Perspectivas em Ciência da Informação, Belo Horizonte, v. 13, n.1, p. 95-111.

[80]. Mafra Pereira, F. C., (2006), Uso de fontes de informação: um estudo em micro e pequenas empresas de consultoria de Belo Horizonte. 2006. 154 f. Dissertação (Mestrado em Ciência da Informação) - Escola de Ciência da Informação, UFMG, Belo Horizonte.
[81]. Mafra Pereira, F. C., (2000), Fundamentos metodológicos da pesquisa de Marketing. 2000. 68 f. Monografia (Especialização lato sensu em Gestão Estratégica de Marketing) – Centro de Pós-Graduação e Pesquisas em Administração da Universidade Federal de Minas Gerais, Belo Horizonte.
[82]. Malhotra, N. K., (2001), Pesquisa de Marketing: uma orientação aplicada. 3. ed. Porto Alegre: Bookman.
[83]. Mattos, M. C; Goulart, I. B., (2012), Da possibilidade de uma GIC ampla: reflexões iniciais entre a ciência da informação e a psicologia social. **PerspectivasemGestão&Conhecimento,** João Pessoa, v. 2, n. 2, 2012.
[84]. Mayer, J. H., Steinecke, N., Quick, R., & Weitzel, T. (2013) More applicable environmental scanning systems leveraging "modern" information systems, *Information Systems and e-Business Management*, 11(4), 507-540.
[85]. Mendonça, S., Cardoso, G., &Caraça, J. (2012) The strategic strength of weak signal analysis, *Futures*, 44(3), 218-228.
[86]. Miller, C. C. & Ireland, R. D. (2005). «Intuition in strategic decision making: friend or foe in the fast paced 21st century? ». Academy of Management Executive, 19(1), 19-30.
[87]. Mintzberg, H. &Lampel, J. (1999). «Reflecting on the Strategy Process». Sloan Management Review, 40(3), 21-30.
[88]. Mintzberg, Henry, Ahlstre B. & J. Lampel (1998). Strategic Safari: A Guide Tour Througth the Wilds of Strategic Management, Prentice-Hall, London.
[89]. Mintzberg, H., Quinn, J. B., & Ghoshal, S. (1995). The Strategy Process. London: Prentice Hall.
[90]. Mintzberg, H. & Waters, J. (1985). «Of strategies, deliberate and emergent». Strategic Management Journal, 6(3), 257-272.
[91]. Mintzberg, Henry (1982). Stucture&Dynamique des Organizations. Les editions d'Organisations, Paris
[92]. Mintzberg, Henry (1981). Organiserl'entreprise: prêt-à-porter ou sur mesure? Harvard L'Expansion.
[93]. Mintzberg, H. (1979). The Structuring of Organizations. Prentice Hall. Mintzberg, H. (1990a). «The design school: Reconsidering the basic premises of strategic management». Strategic Management Journal, 11(3), 171-195.
[94]. Mintzberg, Henry (1977). «Planifier à gauche etgérer à droite». Harvard-l'Expansion. nº 3/1976.
[95]. Montalli, K. M. L., (1994), Informação para negócios no Brasil: reflexões. In: Seminario Nacional De Informacao Para Indústria E Comercio Exterior, 1., 1993, Belo Horizonte. Anais… Belo Horizonte: UFMG/EB, p. 165-173.
[96]. Montalli, K. M. L., (1987), Information in the capital goods industry in Brazil. Loughborough: Loughborough University of Technology.
[97]. Nobel Foundation (2001). Markets with Asymmetric Information. Vol. 2001, The Official Web Site of the Nobel Foundation
[98]. Nonaka, I.; Konno, N., (1998), The concept of "ba": building a foundation for knowledge creation. California Management Review, Berkeley, v. 40, n. 3, p. 40-54.
[99]. Nonaka, I., Takeuchi, H. (1997) "Criação de conhecimento na empresa*:* como as empresas japonesas geram a dinâmica da inovação". 4. ed. Rio de Janeiro: Campus.
[100]. Nonaka, I.; Takeushi, H., (1995), The knowledge-creating company: how japanese companies create the dynamics of innovation. New York: Oxford UniversityPress, 284 p.
[101]. Pacheco, C. G., e Valentim, M. L. P., (2010), Informação e conhecimento como alicerces para a gestão estratégica empresarial: um enfoque nos fluxos e fontes de informação. In: Valentim, M., Gestão, mediação e uso da informação. São Paulo. CulturaAcademica, p. 319-341.
[102]. Penrose, E. (1959). The Theory of the Growth of the Firm. BasilBlackwell, London.
[103]. Pereira, M. F. F., (2003), Gerenciamento da informação: um diagnóstico da micro e pequena empresa industrial de Londrina. 2003. 154 f. Dissertação (Mestrado em Engenharia de Produção) – Universidade Federal de Santa Catarina, Florianópolis.
[104]. Perspectivas em Ciência da Informação, (2016), v.21, n.2, p.100-119, abr./jun. 119
[105]. Petró, B., (2008), Análise do fluxo informacional dos gestores turísticos da unidade de conservação Parque Natural Municipal Mata Atlantica de Atalanta – SC, p. 184. Dissertação (Mestrado em Ciência da Informação), Universidade Federal de Santa Catarina, Florianópolis.
[106]. Pettigrew, A. (1992). «The character and significance of strategy process research». Strategic Management Journal, 13(8), 5-16.
[107]. Piaget, Jean, (1986), **O Possível e o necessário**: evolução dos necessários na criança. Porto Alegre: Artes médicas, v. 2.

[108]. Pinheiro, Lena Vânia R., (1982), Usuário – Informação: o contexto da ciência e da tecnologia. Rio de Janeiro: LTC-Livros Técnicos e Científicos, 66 p.
[109]. Porter, Michael (1990). The Competitive Advantage of Nations. Free Press, New York.
[110]. Porter, M., (1998), El Poder de decir no. Revista Banking Strategy. http://www.crie.coope.ufrj.br/kmtools/knowledge/kr-glossarios/ 1998.
[111]. Porter, M., (1987), *From Competitive Advantage to Corporate Strategy*, Harvard Business Review, Maio-Junho
[112]. Porter, M. E. (1985). Competitive advantage: creating and sustaining superior performance. New York: The Free Press.
[113]. Porter, M., (1982), **Choix stratégique et concurrence,** Economica, Paris, p. 426.
[114]. Porter, Michael (1980). Competitive Strategy. Free Press, New York. PORTER, MICHAEL (1984). Vantagem Competitiva. 5ª Edição, Editora Campos.
[115]. Postman, N. (1999). Building a Bridge to the 18th Century: How the Past Can Improve Our Future. USA: Knoop.
[116]. Pozzebon, M.; Freitas, H. M. R. De; Petrini, M., (1997), Pela Integração da inteligência competitiva nos EnterpriseInformationSystems (EIS). Ciência da Informação, Brasília, n. 3, v. 26, p. 243-254, set./dez.
[117]. Prahalad, C. F. &Gary Hamel (1995). La ConquêteduFutur. Inter Editions, Paris.
[118]. Prusak, James Mcgee e Laurence, (1995), *Gerenciamento Estratégico da Informação*, Editora Campus, Rio de Janeiro.
[119]. Prusak, L.; McGee, J., (1994) "Gerenciamento estratégico da informação*"*. Rio de Janeiro: Campus.
[120]. Prahalad, C. K. & Hamel, G. (1990). «The core competence of the corporation». Harvard Business Review, 68(3), 79-91.
[121]. Ribeiro Junior, João., (2003), Introdução à Fenomenologia. Campinas: Edicamp, 84 p.
[122]. Rossel, P. (2012) Early detection, warnings, weak signals and seeds of change: a turbulent domain of futures studies, *Futures*, 44(3), 229-239.
[123]. Rumelt, R. P. &Shendel, Teece (1991). «Strategic Management and Economics». Strategic Management Journal (12), pp. 5-29.
[124]. Samara, B. S., Barros, J. C. de., (2002), Pesquisa de Marketing: conceitos e metodologia. 3. Ed. São Paulo: Prentice Hall.
[125]. Sarmento, M. J., (2003), Imaginário e culturas infantis. **Caderno de Educação**, Pelotas, v. 21, p.51-59, jul./dez. 2003.
[126]. Schoemaker, P.J.H., & Day, G.S. (2009) How to make sense of weak signals, MIT Sloan Management Review, 50(30), 8189.
[127]. Schumpeter, J. A. (1993 (1934)). The theory of economic development. New Brunswick, London: Transaction Publishers.
[128]. Shannaon C. E., Weaver W., (1972), *The Mathematical Theory of Communication*, University of Illionois Press, Urbana
[129]. Shannaon C. E., Weaver W., (1949), *The Mathematical Theory of Communication*, University of Illionois Press, Chicago
[130]. Shannaon C. E., Weaver W., (1948), *The Mathematical Theory of Communication*, Bell System Technical Journal, 27, pp. 379-423, pp. 623-656
[131]. Silva, Júnia Guimarães e., (1999), Ciência da informação: uma ciência do paradigma emergente. In: Pinheiro, Lena Vania R. (Org.). Ciência da informação, ciências sociais e interdisciplinaridade. Brasília : IBICT, p. 79-117.
[132]. Silva, T. E.; Tomaél, M. I. (2008). Repositórios institucionais e o modelo Open. In: Tomaél, M. I. (org.). Fontes de informação na internet. Londrina: EDUEL.
[133]. Silva, Tomaz Tadeu. (Org.)., (1999), O que é, afinal, estudos culturais? Belo Horizonte :Autêntica.
[134]. Snodgrass, C. R., (1984), *Cultural Influences on Strategic Control System Requirements* ,(Ph. D. dissertation, University of Pittsburg, Gradate School of Business
[135]. Strauss, J. D.; Radnor, M.,(2004), Roadmapping for Dynamic and Uncertain Environments. *Research Technology Management*, v. 47, n. 2, p. 51.
[136]. Sun Tzu, (1971), *The Art of War*, Oxford University Press, Nova Iorque.
[137]. Teece, Pisano E Shuen (1990). Firm Capabilities, Resources and the Concept of Strategy. Cahier de Recherche, University of Berkeley, 90 (9),
[138]. Thompson, J. L. (1999). «A strategic perspective of entrepreneurship». International Journal of Entrepreneurial Behavior & Research, 5(6), 279-296.
[139]. Truijens, Onno, (2002), *Twoards a Resource-based Theory of Information Strategy*, Britsh Academy of Management Annual Conference 2002, September 9-11,
[140]. Weick, K. E., (2000), *Making Sense of the Organizations*, Blackwell Publishers, Boston

[141]. Weick, K. E., (1995), *Sensemaking in Organizations*, Thousand Oaks, CA: Sage Publications
[142]. Weick, K. E., (1979), *The Social Psychology of Organizing*, 2ª Edição, Random House, Nova Iorque
[143]. Werneck, Vera Rudge, (2006), Sobre o processo de construção do conhecimento: o papel do ensino e da pesquisa. **Ensaio:** avaliação e políticas públicas de educação, Rio de Janeiro, v. 14, n. 51, p. 173196, abr./jun.
[144]. Wernerfelt, B. (1989). «From Critical Resources to Corporate Strategy», Journal of General Management Journal, Vol. 14, nº 3, Primavera de 1989/5.
[145]. Wernerfelt, B. (1984). «A Resource-Based View of the Firm», Strategic Management Journal, Vol. 5(2), pp. 795-815.