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## THE DECISION MAKING PROCESS AND WEAK SIGNAL TREATMENT

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### ABSTRACT

Along day to day conduction of organizational activities, several decisions are taken, some of which are merely operational whilst others directly influence corporate strategy. To treat issues pertaining to organizational strategy, many companies devote effort concerning the monitoring of the competitive environment which, despite bringing forth positive results to the corporation, is not naturally reflected in routine activities. One of the most proactive ways to monitor the competitive environment is treating weak signals which, given their distinctive characteristics, are able to demonstrate, in an anticipated manner, the occurrence of strategically relevant events. This article develops a theoretical analysis concerning these practices, starting off with conceptualizations, their similarities and seminal aspects of activities and characteristics of both fields: the occurrence of individual and organizational biases, the use of processual models and methodologies, the need for interpretation, organizational learning and the use of intuition. A theoretical approach concerning these two apparently distinct practices demonstrates that many of their characteristics are similar. This allows for the suggestion that, once the organization presents any initiative in whatever type of processual organization decision making, or given the consolidation of a treatment process for weak signals, resources might be reduced and results multiplied.

**Key words:** Decision making process. weak signals.

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## O PROCESSO DECISÓRIO E O TRATAMENTO DE SINAIS FRACOS

### RESUMO

No desempenho cotidiano das atividades organizacionais, diversas decisões são tomadas, algumas meramente operacionais, outras com influência direta na estratégia da organização. Para tratamento de questões pertinentes à estratégia organizacional, muitas organizações despendem esforços relacionados ao monitoramento do ambiente competitivo, que, apesar de trazer resultados positivos à organização, não se encontram naturalmente refletidos nas atividades cotidianas. Uma das formas mais proativas de monitoramento do ambiente competitivo é o tratamento de sinais fracos, que, por suas características distintivas, conseguem demonstrar, de forma antecipada, o acontecimento de eventos estrategicamente relevantes. Este artigo desenvolve uma análise teórica acerca dessas práticas, iniciando pela conceituação, suas similaridades e aspectos seminais das atividades e características de ambas as áreas: a ocorrência de vieses individuais e organizacionais, a utilização de modelos processuais e metodologias, a necessidade de interpretação, a aprendizagem organizacional e a utilização da intuição. Uma abordagem teórica a respeito dessas duas práticas aparentemente distintas demonstra que muitas de suas características são semelhantes. Isso permite sugerir que, uma vez que a organização possua alguma iniciativa em qualquer tipo de organização processual da tomada de decisão, ou no estabelecimento de um processo de tratamento de sinais fracos, recursos podem ser reduzidos e resultados, multiplicados.

**Palavras-chave:** Processo decisório. Sinais fracos.

## 1 INTRODUCTION

This article proposes to conduct a bibliographical revision positioning the treatment of weak signs in the decision making process context, identifying common elements in the study of both and a handful of possible contributions with the intent of determining if the parallel between theme approaches allows for the preparation of a joint implementation mode.

The treatment of weak signals via environment monitoring is a strategic issue to the survival and success of an organization. Several researches demonstrate that effort devoted to this activity is directly related to corporate success (Newgren, Rasher & LaRoe, 1984; Dollinger, 1984; West, 1988; Daft, Sormunen & Parks, 1988; Subramanian, Fernandes & Harper, 1993; Ngamkroekjoti & Johri, 2003). Nevertheless, there is evidence that its practical use has been poorly applied within corporations (Wright, Pickton & Callon, 2002; CIO-Insight, 2003).

Literature relative to the treatment of weak signals presents several common references to those of decision processes, which seems to suggest great proximity between themes. One of the purposes of competitive intelligence, in which one introduces the observation and treatment of weak signals, refers to the refinement of environment information to promote more efficient business decisions (Ghoshal & Kim, 1986; Gilad & Gilad, 1986). However, references as to initiatives to implement processes that improve the treatment of both themes in a joint manner are virtually nonexistent.

One of the reasons for the lack of dissemination of environment monitoring practices to identify and treat weak signals consists in the fact that the nature of this activity is distant from core day to day managerial activities. In this sense, this article's attempt to position the treatment of weak signals within the decision making processes context, also seeks to raise discussion as to the possibility of including the concern of including the treatment of these signals in the structure of decision marking processes at

organizations. The expectation lies in the fact that if inserted within a broader context, adoption is eased.

Once treating matters in a routine manner, i.e., implementing processes and methodologies defined by the organization, there are still indications in the bibliography that the search for information in the environment which is external to the company has proven to be an essential source of advantage in the definition of strategies, in the speed and efficiency of decision making (Kumar, Subramanian and Standholm, 2001; Choo, 2001a), as well as concerning the fact that decisions implemented in a structured manner present better financial and resource allocation results (Shape & Keelin, 1998).

## **2 WEAK SIGNALS CONCEPTS**

### **2.1 THE MONITORING OF THE COMPETITIVE ENVIRONMENT**

The competitive environment in which companies are inserted is ever increasingly globalized, prone to more rapid changes and subject to the influence of distinct and numerous forces. Aguilar (1967) was the forerunner of the idea of monitoring the environment as a means of supporting managers in the planning of the organization's future and in the determination of actions to be taken. This relevance was also evidenced by Bright (1970), who listed four environments – political, economic, technological and social – to be analysed so as to provide organizations with conditions to anticipate themselves to changes.

Choo (2001a) proposes an interesting contextualization concerning the analysis of the environment. He starts off from the observation of competitor forces (Porter, 1980), passes by more ample dimensions such as that of competitive intelligence and business intelligence and even admits the monitoring of the so-called social intelligence.

The deliberate search of information or the simple monitoring of signals which might indicate changes is very well equated in the model proposed by Daft & Weick (1984) and complemented by Choo (2001b), who treats the perception dimensions of how analysable the environment is and that concerning the intent to enter or not the environment to seek information (active or passive posture).

## 2.2 THE STRATEGIC NEED TO OBSERVE THE ENVIRONMENT

Another approach (Ansoff, 1975) which also defends the monitoring of the environment arose as of the perception concerning the lack of capability strategic processes present as to the identification of rapid changes in the corporate environment. To by pass such a situation, the organization should promote an alert system anticipating changes or develop a system of sufficiently rapid replies so that such changes might not impact in an unrecoverable manner, organizational activities.

The proposal defended by Ansoff (1980) resulted in a formal system to monitor the environment, value the impact and urgency perceived and develop actions and responsibilities. Such a system would serve as complement to the conventional strategic planning process; the latter focused on the long term whilst the former, named issue management, would serve as a short term alert.

This connection however was only taken to effect by Dutton and Ducan (1987), who evidenced the instrumental function of management per issues, via the receipt of new information and its interpretation. Such an activity creates, in a diverse dimension of the conventional cyclic planning activities, a list of matters considered of relevance and utilized as input for the periodic planning activities. Dutton (1986) introduces the concept of a strategic agenda, as a set of strategic issues that receives collective attention from the organization.

It's worth noting that, in addition to the strategic dimension covered, Ansoff (1975) proposes that the rupture between reality and

outlined planning does not require the notion of the state of knowledge in which the organization is inserted concerning the issue covered. He emphasizes the existence of weak signals and presents as a solution the need for organizational flexibility. Such flexibility, in turn, is attained with the formulation of possible previously planned actions for organizational adequacy directed at each probable expected surprise.

As of these initial concepts, many studies were developed in environment monitoring, presenting in a didactical manner, two major guidelines: the search for information demanded by the company itself (Herring, 2002; Bernhard, 1994; Mody, 2005) and the creation of an alert system for anticipative signals (Lesca, 2003; Blanco, Caron-Fasan & Lesca, 2003; Schoemaker & Day, 2009).

### 2.3 WEAK SIGNALS

Further extending the initial conceptualization of weak signals, Caron-Fasan & Lesca, (2003) identify that the implementation of a competitive intelligence system, with views to reducing uncertainties and anticipate non expected changes in the environment, derives from the constant improvement in the information capturing process and its analysis.

Information collected in the environment, perceived as weak signals, is anticipative, qualitative, ambiguous, fragmented and may come in various formats and from distinct sources. This fact explains itself given that the environment is not static and its representation takes place by means of a collective construction process based on attention and interpretation. That is why conceptualization of weak signals does not require a formal structure or an established process where capturing signals is not sufficient, but also its interpretation and the configuration of its meaning before pre-established scenarios and contexts, in addition to a subsequent assimilation and learning stage.

Thus, the information capturing and processing process, particularly that concerning anticipative signals, may be divided into three stages: the

perception of a stimulus; interpretation with the intent of forming sense; and learning or incorporation of new information in the existing representation. A critical stage is the very definition of relevance of the anticipative signal, mostly observed in limited time and excess information situations, transforming the identification of the weak signal into a function of the observer's sensitivity and knowledge.

Therefore, all three stages shall be covered in this article and confronted with the major decision theories, since several elements are common and even complementary to those utilized in decision theories.

Furthermore, the limitation of the competitive intelligence activity in the interpretation of weak signals, resides in uncertainty and complexity which impact the judgement of information selection to the extent that, in certain cases, filter simplifying and discard of relevant information, might occur. At this stage and also of great importance, thus covered in this article, arise individual and organizational cognitive processes. The studies of these biases that circumvent the decision making activity can also be utilized, concomitantly, to alert the information analyst, assisting as alert in the formation of prejudgements or use of mental models and previously conceived ideas that might distort the perception and interpretation of weak signals.

### **3 WEAK SIGNALS IN THE DECISION PROCESS CONTEXT**

To analyse similarities between weak signals treatment processes and the decision making process, it therefore becomes important to first identify a context in common that both are facing. Mintzberg, Raisinghani and Théorêt's (1976) seminal study, which proposes a basic structure for decision treatment, presents itself as an excellent base for this analysis given the scope of elements of the decision process, identified by its focus on "non structured strategic decisions". The unique and singular nature of the identification and treatment of a weak signal may easily be associated

to this type of decision, characterized by not having been previously found, in similar form.

In their studies, Mintzberg, Raisinghani and Théorêt (1976) define the decision process as a series of actions that start with the identification of a stimulus which demands decision making and end with the commitment of resources for action. Established as the first stage of the decision process, identification is categorized as an "opportunity", "issue" or "crisis" in light of the nature of the stimulus that triggers the process. Stimuli for the "crisis" are associated with cases of extreme pressure whereby the taking of decisions is mandatory. Decisions associated with "opportunities" are started in a voluntary manner as of stimuli of a non urgent nature. Cases where the urgent nature is found at several levels between extremes are known as "issues".

As to the specific case of issues and opportunities, Mintzberg, Raisinghani and Théorêt (1976) state that identification must be conducted as of ambiguous and verbal data. As previously mentioned, such characteristics (ambiguity and informality) are part of weak signals nature (ambiguous, fragmented, presented in diverse manners, sprung from various sources and anticipative). Based on these conceptualizations, one may conclude that the identification of weak signals is clearly positioned in the spectrum range closer than Mintzberg, Raisinghani and Théorêt's (1976) model defines as "opportunity" or "issue" of weak stimulus, whereby the stimuli that trigger the decision process present themselves in a less clear manner. However, it is worth noting that the positive connotation associated with the classification under the term "opportunity" does not reflect the scope associated with weak signals which are equally devoted to the identification of events which might be considered threats.

Furthermore, as pictured, the identification of the weak signal is only the first stage of an entire sequential process which continues with the interpretation and learning of the newly internalized information, presenting, in much the same way as that concerning the decision process,

a sequence of actions which seek a final objective, which, in both cases, results in the taking of a decision.

In the study, Mintzberg, Raisinghani and Théorêt (1976) further identified that the same query can migrate through the stimuli grading spectrum, shifting from an opportunity to a problem and finally become a crisis in view of delays in the decision process.

The initiative to start an action depends on the fact of the cumulative amplitude of stimuli surpassing a triggering level which, according to Radomsky (1967), is variable and associated with the work load of the managers. Thus, managers involved in the treatment of several crisis and issues are poorly inclined to identify threats and opportunities via weak signals.

As of these observations, one may raise the hypothesis that the improvement of identification and treatment of weak signals may contribute with the improvement of the decision process as a whole, generating a virtuous cycle whereby the premature identification of strategic issues contributes with the reduction in the springing of greater problems and crisis. Consequently, managerial workloads, associated with this type of situation are reduced, making them more capable of identifying new opportunities and threats.

It becomes evident that, theoretically, the context in which the capturing and interpretation of weak signals is utilized might easily be likewise jointly employed with the identification of strategic threats and opportunities for non-routine decision making purposes, suggesting a possible synergy of results, associated with a reduction in the allocation of resources.

## **4 ELEMENTS OF INTEREST IN THE ANALYSIS OF WEAK SIGNALS AND DECISION PROCESS**

### **4.1 INDIVIDUAL BIASES**

The qualitative and ambiguous nature associated with weak signals makes its introduction in the corporate market directly related to people's cognitive capabilities in absorbing and interpreting the different sources of information to which they are exposed during their day to day activities. Any entry point of information at the company is a potential generator of weak signals which might represent a given strategic issue to be treated, irrespective of the business area or hierarchy level, of those involved in its identification.

To this effect, so that a signal may come to be treated, one must first identify it as being of relevance and take the initiative of "alerting" the company via whatever available formal or informal means. That is, the first stage required for a weak signal to start off towards triggering a corporate decision process is directly associated with an individual's decision process.

Therefore, the identification of factors that might influence the individual decision process proves to be of significant relevance in the search to improve the identification and ranking of weak signals. It justifies the use of concepts such as Simon's (1957) limited rationality and Tversky and Kahneman's (1973, 1974, 1981) studies related to heuristics and biases, concerning the importance of elements, to the quest to render the organization more efficient in the monitoring of environmental signals.

An initiative in this sense is presented by Schoemaker & Day (2009) in an article in which they present manners to make sense of weak signals, identifying a series of personal biases which interfere in the correct interpretation of this type of signal. The biases presented include the inherent trends of individuals to "filter" signals which do not fit into previous ideas of what to expect in the environment and "distort" the interpretation of the signal so as to fit it into a belief of what they desire to be true. Thus, much like egocentrism leads people to overvalue their role in events to be explained, the attempt to reinforce a personal perspective leads exclusively to the identification of evidences that confirm it, disregarding those that oppose the same.

So as to prepare a methodology to treat weak signals, Blanco, Caron-Fasan and Lesca (2003) utilized in their article the idea that the understanding of the cognitive process is essential to an efficient decision support system project. The methodology seeks to incorporate two concepts they identified in literature prepared by several authors (Miller, 1956; Mintzberg, Raisinghani and Théorêt, 1976; Goldhar, Bragaw and Schwartz, 1976; Taggart & Robey, 1981) as to the characteristics of the human cognitive process: the regrouping of information and the forming of causality links between the portions of information.

#### 4.2 ORGANIZATIONAL BIASES

As presented in the previous item, so that a signal may be treated once it is identified as being relevant, initiatives must be taken to “alert” the corporation via available formal or informal means. The second stage of the weak signal in its path to trigger a corporate process, shall have its efficiency directly influenced by the internal structure of information flows within the company and by the interpretation process utilized, whether it is a specific analysis process or a strategic alert system.

The identification of a signal characterized as capable of predicting rupture in relation to a stable corporate environment situation might be impaired by phenomena such as *groupthink*. This term, coined by Janis (1972) is described as “*a thought mode which people adopt when deeply involved in a cohesive group, in which the search of members for unanimity, supersedes motivations to realistically evaluate alternative courses of action*”. In this context, people tend to prefer to ignore an alert instead of disturbing the state of consensus of the group or organization.

Although some authors suggest that the analysis and interpretation of weak signals ought to be done collectively (Weick, 1995; Lesca, 2003) so as to make best use of the diverse individual forms of observation of a given situation as well as forming a shared perspective (Senge, 1990)

throughout the entire organization, the occurrence of *groupthink* biases must be monitored in a continuous manner and whenever possible, avoided.

Schoemaker & Day (2009) state that, in a complex social environment such as that of companies, people's interpretation of information is not only sensitive to what is being said but to whom is saying the same, both the signal and the source being judged when seeking the meaning. The credibility of the source is influenced by several factors including *status*, level of experience and policies, amongst others. These social biases prove to be specifically stronger when weak or incomplete information is involved.

The use of *brainstorming* (Osborn, 1963), without the identification of contributors, or the use of the Delphi (Linstone & Turoff, 2002) method are some of the tools that seek to minimize the social influences of the group upon individual opinions. They can supply forms of attempts to refrain the organization being influenced by organizational biases and disseminate an encouragement culture to promote discussion concerning conflicting points of view.

#### 4.3 METHODOLOGIES AND IDENTIFICATION AND TREATMENT PROCESSES

The attempt to integrate approaches in the treatment of weak signals and decisions, in practice, certainly involves the incorporation of elements from one field in the treatment of another, or eventually, a merge of different methodologies so as to come to a more ample practical approach.

In his presentation of the concept of weak signals, Ansoff (1975) at the time already proposed that, with the increase in the rate of change in corporate environments, there was a need to adopt a gradual response method amplifying and responding to weak signals, in light of what he called "state of knowledge", adapting actions along time as the level of information increases.

To this effect, decision analysis methods such as *plan-of-record*, presented by Matheson and Matheson (2007), might contribute once the approach emphasizes “learning by doing” by means of which managers experiment, work the action plan and adjust it as they learn. Given the speed of environmental change, which the authors name *hyper-world*, the objective of this analysis is to direct the current plan’s change to one that creates greater potential along time.

Much like several common elements impact the decision process and the treatment of weak signals at organizations, it is also possible to identify implementation methodologies from both fields that nowadays are applied in practice and which present similar characteristics.

An example lies in the strategic choice approach utilized by Friend (2001) as a practical method to help people work together to evolve, in a confident manner, towards decision making focusing on possible manners to manage uncertainty. With views to improving non routine decision making processes by treating uncertainties associated with each case, the application of the methodology takes place by means of meetings with groups of participants in the decision process assisted by a facilitator. In a discussion process, by means of preparing a diagram with connections and grouping of the identified elements, the group seeks to establish the most important elements for the core of the decision process.

Another approach that focuses on improving the decision process based on meetings supported by a facilitator is that of the turbo decision analysis presented by Matheson and Matheson (2007). The method rests on one day long gatherings where participants come together to formulate the problem, prepare alternatives, design an influence diagram, evaluate uncertainties and revise the analytical results with views to coming to a consensus as to the decision.

In a similar approach to the two previous ones but focused on identifying and treating weak signals, Lesca (2003) presents a model that is also based on systematic gatherings with managers, supported by a

facilitator. The method also relies on the building of a diagram that groups the different “portions” of information received from the environment according to similarity criteria (express the same idea or relate to the same theme) and proximity (acknowledgement of a characteristic in common). With information distributed into groups, the second step consists in forming connections between the portions of information via links that might represent causality, influence, objection or confirmation.

These three approaches indirectly help minimize the impact of individual biases on the process and improve the treatment of uncertainties, but may be criticized for not directly treating the issue of biases related to a group and for heavily depending on the experience and ease of the facilitator of the meetings. Furthermore, according to Matheson e Matheson (2007), companies are increasingly developing more and more resistance to approaches demanding several meetings.

However, similarity seems to suggest it is feasible to develop an approach model comprising the three perspectives. Furthermore, the increase in the result obtained via the series of meetings can reduce restrictions from organizations as to an approach of this kind, facilitating the adoption process.

As a secondary result and further explained ahead, one notices the increase in organizational learning given that interpretation of weak signals processes and those of understanding and adjustment for decision making demand the collective formation of sense concerning information treated. This provides for the creation of analysis models based on experience and form information treatment, alternative selection and decision standards based on acquired knowledge.

#### 4.4 INTERPRETATION AND SENSEMAKING

In opposition to Simon’s (1947/1997) vision that perceived the organization as a decision making system, Weick (1969/1979), taking onto account the limited rationality of the human being, adopted an evolutionist

organization approach. In his model, the members of the organization form the environment, act upon it to shape it to their needs, select the most appropriate and, finally, store in the organizational memory the entire interpretative process performed. There would be no discovery of a new environment but rather the intervention of new environments, as of a constructivist approach managing novelties. To this effect, the organization would have to act as an interpretative system of the environment.

In his discussions concerning the management of innovation, the forerunners of this approach, Burns and Stalker (1961/1968) considered within organizations reception, alteration, re-arrangement and information re-composition dimensions, before action itself, forming a notion of interpretative systems.

This same configuration of an interpretative system is proposed as a core function in Daft and Weick's (1984) model:

People attempt to interpret what they do, define what they have learnt, solve the problem concerning what they should do next. Building interpretations concerning the environment is a basic requisite of individuals and organizations. (...) Interpretation is a critical element that distinguishes human organizations of inferior level systems.

Daft and Weick (1984) define interpretation as a "translation of events process and development of a shared understanding and conceptual schemes between the members of upper management". Finally, they develop their model comprising three stages: *scanning* (data collection); interpretation (rendering sense to information); learning (decision making for action).

However, greater were Weick's (1975) subsequent contributions when he developed the concept of *sensemaking*, herein translated as rendering sense, which involves a more ample and consistent approach of the interpretation stage. Creating sense comprises, in addition to building significance concerning something, notions such as structuring the unknown, proposition of stimuli for the creation of models, thought

processes which utilize retrospective data to explain surprises, proposition of significance as of the authorship on ideas, individual and collective understanding of situations, development of cognitive environment maps, action to create interpretation forms and filters.

*Sensemaking* would be utilized in situations of ambiguity and uncertainty demanding intervention, filtering and design of the subjective concerning information perceived into something more tangible, applicable, inclusively, prospectively. It thus transforms itself into a central element of the translation of weak signals in the quest for more tangible significances and possible alert for action.

In an analogous manner, the collective creation of sense would also take place within a decision making context by means of a tool known as *framing* (Fairhurst & Sarr, 1996), whereby the understanding concerning a given observation is levelled so as to establish judgement concerning its characteristics and meanings. However this definition of significance does not take place as of a single observation but rather in a collective manner, whereby distinct points of view may be confronted. This stage, structured by Mintzberg, Raisinghani and Théorêt (1976), would fill in the portion relative to the setting of boundaries and understanding of the problem.

Another possibility concerning the use of *sensemaking* in decision making was proposed by Balogun, Pye and Hodgkinson (2008), as an element of analysis of decision making structures, driven by the relevance of the subject matter in social practices, particularly in the negotiation, personal relationship and use of power requisites. The authors analyse this last aspect from a *sensegiving* perspective as an influence of the construction of meaning concerning the definition of social reality, where whoever decides manages to exercise power, imposing personal meanings together with personal conclusions and interests, to the proposed alternatives. Therefore, they manipulate the direction of decisions and establish legitimacy in this way exercising politics in decision making.

#### 4.5 ORGANIZATIONAL LEARNING

The field of competitive intelligence presents a natural proximity with organizational learning and information and knowledge management. This is due to the fact that, continuous treatment with information and, more importantly, the need to filter relevant information within a vast available quantity, makes areas subject to environment observation and treatment of information, display mechanisms, if merely of informal nature, that optimize their activities.

Once brought to the weak signals context, the constant quest for meanings, trends and signs of rupture once more leads to the need to set boundaries as to what to look for, where and until when (Lesca, 2003). In this sense, organizational learning must account for utilizing past experiences to constructively contribute with new observations and future interpretations.

Choo (1998) has a holistic perception of organizational learning and bonds individual capacity to learn with the organizational need to interpret and build meanings, the generation of new knowledge and the managing of uncertainty where decision making systems are employed.

Utilizing the characterization of four types of decision making (rational, politic, processual and anarchic), based on the ambiguity of objectives and the level of uncertainty, Choo (1998) manages to establish a close relation between decision making models and the need to search and utilize information, suggesting that, the more information (quantity and quality) there is, the easier is decision making, since rational and mathematical models might be used in a more efficient manner. Given this condition, he therefore proposes a processual model to treat information with views to improving organizational knowledge, with an initially triple objective: create meaning, build knowledge and take better decisions.

In subsequent studies focused on monitoring the environment, Choo (2001a) defends the formation of the "intelligent organization", developing

an information management model directed towards learning and the generation of knowledge.

That is, one verifies that there is a close relation between learning acquired in the observation of weak signals – which demands an established process, rules, observation conditions and valuation of the importance of information, combination of information, creation of meaning and proposition of scenarios and alternatives – and a corporate information and knowledge management process which subsidizes more structured decision making, avoiding the political connotation, uncertainties concerning ambiguous alternatives, interferences of personal biases and organizational influences.

#### 4.6 THE USE OF INTUITION

As presented by Sadler-Smith and Sparrow (2008), few are the studies conducted concerning intuition. Regardless, they managed to lay forth concepts as of the contribution of several authors on the theme, an experimental phenomena based on implicit knowledge stored, on which complex and inter-related cognitive and emotional processes operate, below the conscious alert level.

The dual-processing theory (Chaiken & Trope, 1999) defends that the perception and cognitive systems occur in parallel. Much information is processed automatically and unconsciously, based on rules and inferences implicitly acquired and tacitly maintained. Intuition would take place in an automatic manner, as an involuntary reply to configurations particular to environmental indicators.

Intuition is adaptive when information presented to the receptor requires confirmation in the perception process for its perception, multiple and parallel indicators are presented or when some of the indicators are redundant or irrelevant.

Precisely because of these characteristics, they come close to the context of perception and analysis of weak signals and despite the almost

non existing approach concerning the subject matter in this field of studies, the use of intuition is of prime importance, mostly as to the interpretative and sense making process, particularly in the elaboration of scenarios concerning occurrences and in the creation of alternatives for action. The method known as *puzzle* (Lesca, 2003) largely employs inference and connection of ideas and concepts (similarity, regrouping and proximity), forming cause and effect sequences to extend the understanding on something that is still uncertain; however it is silent as to the verification of intuition, leaving this type of phenomenon implicit to human cognitive analysis, without evidencing it appropriately.

Furthermore, as to the study of the decision process, Dijksterhuis, Bos and Van Baaren (2006) evidenced that deliberate decisions, without the use of cognitive rationale, presented, in certain aspects, better results, indicating that complex choices must remain with unconscious thoughts. Sadler-Smith and Sparrow (2008) also observed greater decision effectiveness based on intuition when in more unstable environments, suggesting the use of normal and structured cognitive processes when in less turbulent environments.

These considerations draw attention to the importance of the study of intuition in both the decision process which seems to be more advanced, and the weak signals perception and interpretation process, which depends not only on minor momentaneous decisions concerning the valuation of perceptions received, but also on the confluence of the perception of other individuals concerning the same observed phenomenon, often in a rapid manner and in an uncertain and turbulent environment.

## **5 CONCLUSION**

The initial theoretical observation proposal as to two apparently distinct areas and to some extent, with distinct direct objectives, from start might lead to some frustration.

However, under more careful analysis, it was identified that the treatment of weak signals and the decision making process present many similarities: both can be informal and treated in a non connected manner but studies indicate that greater structuring of both activities renders improved results. Both initially depend on the perception of a given opportunity concerning a problem to be solved. Subsequently, both need a certain level of interpretation, the framing of the problem or observed information and search of sense in terms of impact and urgency of planning of the next steps.

Both approaches also need the generation of alternatives: the treatment of weak signals, the identification of sensitivity of the subject and the need to draw the attention of upper management; whilst in decision making, the alternative is utilized to establish an array of possibilities that leads to the best choice.

Once these similarities were verified, more seminal aspects of activities and characteristics of both areas were analysed: the incidence of individual biases, of organizational biases, the use of processual models and methodologies, the need for interpretation, organizational learning and the use of intuition.

Once again, a close relation between activities, as well as operational parameters, alerts for the conduction of activities and observations concerning efficiency improvement and results practices which might be used in a similar manner by both areas was observed.

One thus concludes that a trend to establish formal processes – for both the treatment of weak signals and for the structuring of decision making – is gradually consolidating and that the concomitant use of performance improvement efforts of both may be applied, theoretically reducing investment time resources, if one considers applications in a distinct manner.

Naturally, such an affirmation calls for empiric proof, unveiling the possibility of development of new studies and possibly new discoveries

which will allow for the optimization of resources in the search for more effective results.

## BIBLIOGRAPHY

- Aguilar F. J. (1967). *Scanning the business environment*. New York: Macmillan.
- Ansoff, H. I. (1975). Managing strategic surprise by response to weak signals. *California Management Review*, 18(2), p. 21-33.
- Ansoff, H. I. (1980). Strategic issue management. *Strategic Management Journal*, 1(2), p. 131-148.
- Balogun, J., Pye, A. & Hodgkinson, G. P. (2008). Cognitively skilled organizational decision making – making sense of deciding. In G. P. Hodgkinson & W. H. Starbuck (Eds.). *The Oxford handbook of organizational decision making*. Oxford: Oxford University Press.
- Bernhardt, D. C. (1994). 'I want it fast, factual, actionable' – tailoring competitive intelligence to executives' needs. *Long Range Planning*, 27(1), p. 12-24.
- Blanco, S., Caron-Fasan, M. & Lesca, H. (2003). Developing capabilities to create collective intelligence within organizations. *Journal of Competitive Intelligence and Management*, 1(1), p. 80-92.
- Bright, J. (1970). Evaluating signals of technological change. *Harvard Business Review*, 48, p. 62-70.
- Burns, T. & Stalker, G. M. (1961/1968). *The management of innovation*. London: Tavistock.
- Chaiken, S. & Trope, Y. (1999). *Dual-process theories in social psychology*. New York: Guilford Press.
- Choo, C. W. (1998). *The knowing organization: how organizations use information to construct meaning, create knowledge, and make decisions*. New York: Oxford University Press.
- Choo, C. W. (2001a). *Environmental scanning as strategic organizational learning in information management for intelligent organization*. New Jersey: Information Today Inc.

- Choo, C. W. (2001b). Environmental scanning as information seeking and organizational learning. *Information Research*, 7(1), available in <http://informationr.net/ir/7-1/paper112.html>.
- Choo, C. W. (2002). *Strategic management of intellectual capital and organizational knowledge*. New York: Oxford University Press.
- CIO-Insight. (2003). Research: business intelligence 2003 – Are your BI systems making you smarter? Recuperado em 22 de julho de 2010, de <http://www.cioinsight.com/c/a/Research/Business-Intelligence-2003-Are-Your-BI-Systems-Making-You-Smarter/>.
- Daft, R. L., Sormunen, J. & Parks, D. (1988). Chief executive scanning, environmental characteristics, and company performance: an empirical study. *Strategic Management Journal*, 9(2), p. 123-139.
- Daft, R. L. & Weick, K. E. (1984). Toward a model of organizations as interpretation systems. *Academy of Management Review*, 9(2), p. 284-295.
- Dijksterhuis, A., Bos, M. W. & Van Baaren, R. B. (2006). On making the right choice: the deliberation without attention effect. *Science*, volume(311), 1005-1007.
- Dollinger, M. J. (1984). Environmental boundary spanning and information processing effects on organizational performance. *Academy of Management Journal*, 27(2), p. 351-368.
- Dutton J. E. (1986). Understanding strategic agenda building and its implications for managing change. *Scandinavian Journal of Management Studies*, 3(1), pp. 3-24.
- Dutton J. E. & Duncan R. B. (1987). The influence of the strategic planning process on strategic change. *Strategic Management Journal*, p. 103-116
- Fairhurst, G. T. & Sarr, R. A. (1996). *The art of framing: managing the language of leadership*. San Francisco: Jossey-Bass.
- Friend, J. (2001). The strategy choice approach. In J. Rosenhead & J. Mingers (Eds.), *Rational analysis for a problematic world revisited: problem structuring methods for complexity, uncertainty and conflict* (2nd ed.). New York: John Wiley & Sons.
- Ghoshal, S. & Kim, S. K. (1986). Building effective intelligence systems for competitive advantage. *Sloan Management Review*, 28(1), p. 49-58.
- Gilad, B. & Gilad, T. (1986). SMR Forum: business intelligence – the quiet revolution. *Sloan Management Review*, 27(4), p. 53-61.

- Goldhar, J. D., Bragaw, L. K. & Schwarts, J. J. (1976). Information flows, management styles and technological innovation. *IEEE Transactions on Engineering Management*, 23(1), p. 51-62.
- Herring, J. P. (2002). Tópicos fundamentais de inteligência – processo para definição de necessidades. In J. E. Prescott & S. H. Miller, *Inteligência competitiva na prática*. Rio de Janeiro: Campus.
- Janis, I. (1972). *Victims of groupthink*. Boston: Houghton Mifflin.
- Kumar, K., Subramanian, R. & Standholm, K. (2001). Competitive strategy environmental scanning and performance: a context specific analysis of their relationship. *International Journal of Commerce & Management*, 11(1), p. 1-33.
- Lesca, H. (2003). *Veille stratégique: la méthode L.E.SCAnning* ®. Cormelles-le-Royal: EMS.
- Linstone, H. A. & Turoff, M. (2002). The Delphi method: techniques and applications. Recuperado em 22 de julho de 2010, em <http://is.njit.edu/pubs/delphibook/>.
- Matheson, D. & Matheson, J. E. (2007). From decision analysis to the decision organization. In W. Edwards, R. F. Miles & D. von Winterfeldt, *Advances in decision analysis: from foundations to applications*. Cambridge: Cambridge University Press.
- Miller, G. (1956). The magical number seven, plus or minus two: some limits on our capacity for processing information. *Psychological Review*, 63(2), p. 81-97. Available in <http://cogprints.org/730/1/miller.html#subitizing>.
- Mintzberg, H., Raisinghani, D. & Théorêt, A. (1976). The structure of "unstructured" decision processes. *Administrative Science Quarterly*, 21, p. 246-275.
- Mody, M. (2005). KITS (Key Intelligence Topics) in competitive intelligence. In D.L Blenkhorn & C.S. Fleisher (Eds.), *Competitive intelligence and global business*. London: Praeger.
- Newgren, K. E., Rasher, A. A. & LaRoe, M. E. (1984). An empirical investigation of the relationship between environmental assessment and corporate performance. *Proceedings of the Annual Meeting of the Academy of Management*, 44, Washington, DC.
- Ngamkroeckjoti, C. & Johri, L. M (2003). Coping with hypercompetition in the financial services industry in Thailand: environmental scanning practices of leaders and followers. *Information Journal of Bank Marketing*, 21(6), p. 359-368.

- Osborn, A. F. (1963) *Applied imagination: principles and procedures of creative problem solving* (3rd revised Ed.). New York: Charles Scribner's Son.
- Porter, M. (1980). *Competitive strategy*. New York: Free Press.
- Radomsky, J. (1967). *The problem of choosing a problem*. M.S Thesis. Sloan School of Management, Massachusetts Institute of Technology.
- Sadler-Smith, E. & Sparrow, P. R. (2008). Intuition in organizational decision making. In G. P. Hodgkinson & W. H. Starbuck (Eds.). *The Oxford handbook of organizational decision making*. Oxford: Oxford University Press.
- Schoemaker, P. J. H. & Day, G. S. (2009). How to make sense of weak signals. *MITSloan Management Review*, 50(3), p. 81-89.
- Senge, P. M. (1990). *The fifth discipline: the art and practice of the learning organization*. New York: Currency Doubleday.
- Shape, P. & Keelin, T. (1998, March-April). How Smithkline Beecham makes better resource-allocation decisions. *Harvard Business Review*, 76, p. 45-57.
- Simon, H. A. (1947/1997). *Administrative behavior: a study of decision-making processes in administrative organizations* (4th. ed.). New York: Free Press.
- Simon, H. A. (1957). *Models of man*. New York: John Wiley & Sons.
- Snowden, D. J. & Boone, M. E. (2007, November). A leader's framework for decision making. *Harvard Business Review*, 85(11), p. 68-76.
- Subramanian, R., Fernandes, F. & Harper, E. (1993). Environmental scanning in US companies: their nature and their relationship to performance. *Management International Review*, 33(3), p. 271-286.
- Taggart, W. & Robey, D. (1981). Minds and managers: on the dual nature of human information processing and management. *Academy of Management Review*, 6(2), 187-195.
- Tversky, A. & Kahneman, D. (1973). Availability: a heuristic for judging frequency and probability. *Cognitive Psychology*, 4, p. 207-232.
- Tversky, A. & Kahneman, D. (1974). Judgment under uncertainty: heuristics and biases. *Science*, 185, p. 1124-1131.
- Tversky, A. & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 221, p. 453-458.

Weick, Karl E. (1969/1979). *The social psychology of organizing* (2nd ed.). New York: Random House.

Weick, Karl E. (1995). *Sensemaking in organizations*. Thousand Oaks, CA: Sage.

West, J. J. (1988). Strategy, environmental scanning and their effect upon firm performance: an explanatory study of the food service industry. Doctoral Dissertation. Virginia Polytechnic Institute and State University. Blacksburg, VA.

Wright, S., Pickton, D. W. & Callon, J. (2002). Competitive intelligence in UK firms: a typology. *Marketing Intelligence & Planning*, 20(6), p. 349-360.