ECIS 2009 – Sueden – June 11th &12th

Looking for Information: a New Approach to Consider Efficiency and Effectiveness

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Abstract

This paper is an exploratory review of the literature with particular reference to business organizations. Today, we observe in university research and in enterprises practices that looking for information, often converges with the use of internet. We intend to show in this paper historical influences and scientific foundations over which authors build modern looking for information. Both in companies and in scholar situations, we notice a lack of methodology in how to handle the problem of looking for information, an internetization of the looking for, and a Googlelization, mostly based on the paradigm of information acceptance. How can we define an efficient and effective looking for information? We present a new approach to consider efficiency and effectiveness in looking for information.

Keywords: looking for information, efficiency, effectiveness, competitive intelligence, information acceptance paradigm.

1 Introduction

Looking for information, has been often covered in different sciences such as: information sciences, computing sciences, business studies, social sciences and humanities. Analyzing the literature shows the diversity of points of view on this issue. Both in companies and in scholarly situations, we notice a lack of methodology in looking for information. Today, we observe in university research and in enterprise practices that looking for information, often converges with Internet search. How can we evaluate efficiency and effectiveness in looking for information? In this article, we present historical influences and scientific foundations that support the different and various ways of looking for information. We consider a new approach covering information needs, seekings and use [Frion 2009b].

In our information age, digital sources should complement rather than replace the print sources and the people sources. What we observe is in effect, the diminishing use of print sources and human sources towards more digital sources. For this reason, we limit our review of literature here mainly to the period 1990-2008.

We mainly focused on explicit looking for information literature and in the following fields: information sciences, computing sciences, business studies, social sciences and humanities. We also put forward our own enterprise experiences from over 15 years in the field.

First, we will show different points of view, in the domain of looking for information. We will present the availability of a considerable variety of terminologies in this field. Second, we will consider historical influences and scientific foundations which lead to efficiency and effectiveness in looking for information.

Third, we will analyze the typologies of looking for information according to their approach related to information.

To finish with, we will discuss and conclude temporarily on this exploratory research.

2 What is looking for information.

Information is a concept that takes different forms at different integrative levels [Wilson, 2002].

As far as this article is concerned, various terms - in alphabetical order with examples of citation - are used to :

- access information [Rice, 2001, Guilhon, 2004],
- acquire information [Aguilar, 1967],
- brows information [Bates, 1989 et 2007, Choo, 2001],
- fill a gap [Loewenstein, 1994],
- environmental scanning [Aguilar, 1967; Aaker, 1983, Correia & Wilson 1997; Choo, 2001, Lesca H, 2003],
- look for information [Porter, 1980, p 368; Kahaner, 1997, p 75; Bates, 1989, Case 2008],
- retrieve information [Bates, 1989; Kahaner, 1997, p 94; Vakkari, 1999; Wilson, 1999; Kuhlthau, 2005; Belkin, 2008],
- search information [Kahaner, 1997, p 69; Salmon, 1999, p 125; Patton, 1999; Wilson, 1999; Choo, 2001],
- seek information [Salmon, 1999, p 45; Wilson, 1999; Dervin, 1999; Vakkari, 1999; Choo, Deltor, Turnbull, 2000, Kuhlthau, 2005; Choo, 2007], etc.

We will see further down (figure 1) different appearances in the competitive intelligence literature (legal ways to acquire information are reviewed here). Many authors alternatively use different terms, especially in countries like France where writing style tries to avoid repetitions.

We right away notice some degree of confusion. For instance, in French language, there is no such thing as a difference between searching [in digital resources] and seeking [in less specific resources]. In English language information search behavior is nested in information-seeking behavior, which is nested in information behavior [Wilson, 1999]. Environmental scanning includes both looking at information (viewing) and looking for information (searching) [Choo, 2001].

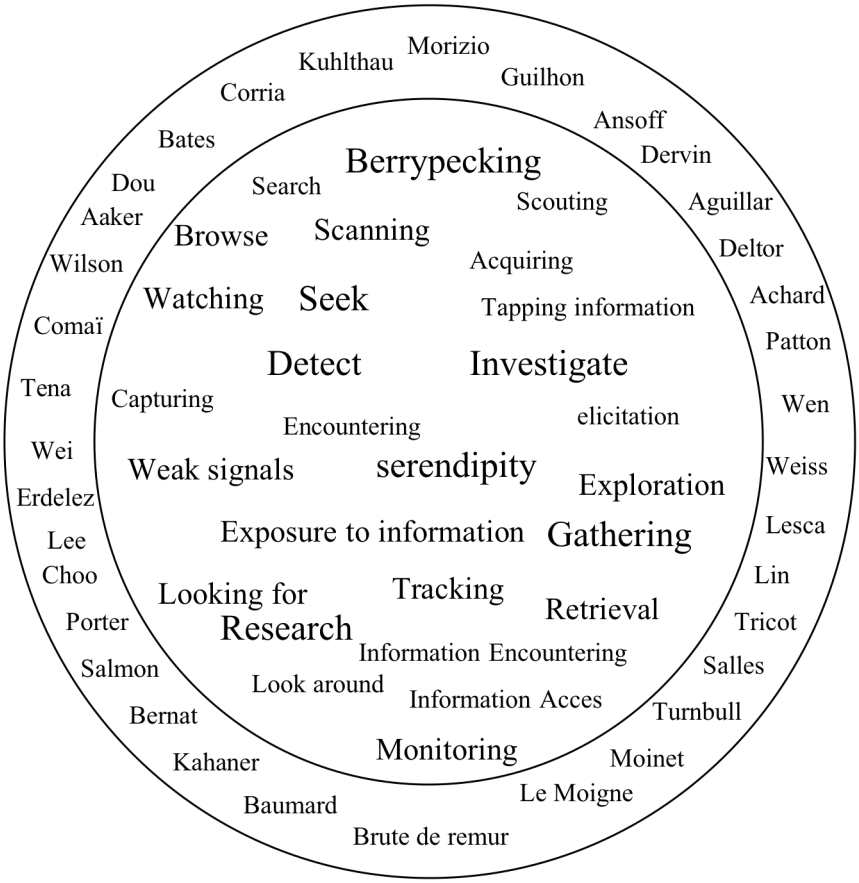

Figure 1 : Semantic cell of looking for information
[tags in the inner disk and authors in the outer disk]

2.1 Ways to look for information in the literature

Here is a diversity and variety of selected suggestions from the literature over looking for information (although many authors use different terms):

Berrypicking [Bates, 1989] the informations are scattered and they have to be picked up one at time, with the possibility to modify the picking at each step (analogy with the fruit picking in the forest);

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- The Information Search Process (ISP) presents a holistic view of information seeking from the user's perspective in six stages: task initiation, selection, exploration, focus formulation, collection and presentation [Kuhlthau, 1991];
- The classic information retrieval model (see figure 2), with identical searching and approximate searching with keywords;
- Probabilistic: based on occurrence and co-co-occurrence of keywords;
- Chaining: starting with one book or aticle, then chaining backwards to find its references, chaining forwards in order to find the literature that uses this first

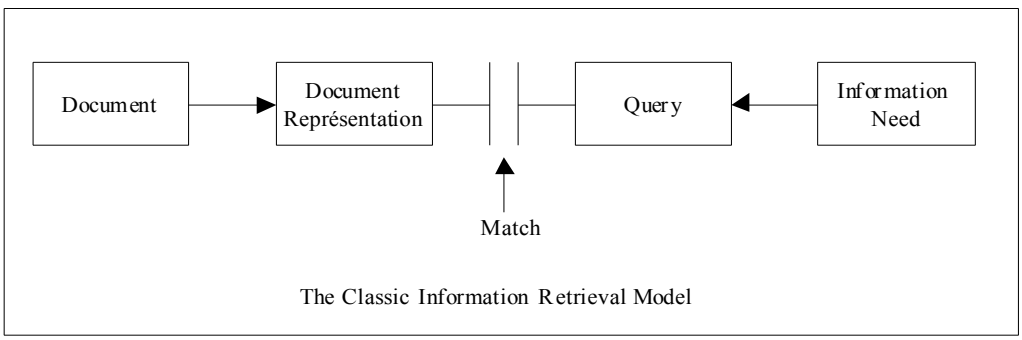

Figure 2 : The Classic Information Retrieval Model, in Bates, 1989

document as a referens, or lateral chaining in order to identify co-authors.

- Scanning, watching, screening: monitoring, updating information on a regular basis [Aguilar, 1967; Lesca, 2003; Choo 2001];
- Puzzle [Fuld, 1995; Lesca, 2003];
- Scenarization: hypotheses formulation that have to be confirmed or denied [Conan Doyles with Sherlock Holmes];
- Proximity searching [Fuld, 1995];
- Databases consultation, retrieval: accessing an available resource [Rice, 2001];
- Interviews, elicitation [Naylor, 2008], subterfuge, open or covert questions [Baumard, 1999];
- Ripple effect: one keyword suggests another keyword from the center towards the periphery [Fuld, 1995, p. 207];
- Serendipity: finding something we where not looking for [Baumard, 1996] or encountering [Erdelez 1999];
- System-oriented, users-oriented [Vakkari, 1999], and behaviours-oriented [Wilson, 1999] or actor-oriented [Polity, 2000];
- The black swan approach: thinking the highly improbable [Taleb, 2007];
- Collective questionning plans and inductive seeking plans [Frion, 2009a];
- Creativity and mind mapping [Buzan & Buzan, 1996];
- Socrates' maieutics: interpersonal skill to give birth to information;
- Not seeking, rather retreating as an hermit: forget and hope for the best;
- Democracy according to Google: credit the documents the most seen, as more relevant;
- Quantitative Methods, qualitative methods or Mixed methods [Plano Clarck & Creswell, 2008];
- etc.

All these models, technics, methods, approaches, etc. have a common element. The review of the literature on looking for information, seems to tacitly adopt the hypothesis of the philosophical statement: information is in the progress paradigm. People feel that information is necessary and more information is better. Therefore it is not a surprise that we notice an internetization of information seeking, and a Googlelization of information searching. Efficiency and effectiveness will depend-amongather things-on the paradigm the user follows.

2.2 Historical influences and scientific foundations to efficiency and effectiveness in looking for information

A theme stressed in the literature is the paradoxical situation that, although there is an abundance of information available, it is often difficult to obtain useful, relevant information when it is needed [Edmunds & Morris, 2000]. Even though we read about information overload, a review of the literature suggests that the results of past research in information acquisition have not always been clear-cut [Creese, 2007;Abram, 2008; Wiseman, Jawaheer, Kostkova & Madle, 2008]. Some authors argue the overload of information is solely an information retrieval problem [Montebello, 1995] or a technology opportunity to help us [Porter, 1985]. Other authors argue this problem not only concerns the system but also the human who is seeing and noticing [Neugarten, 2008].

Clearly the thinking on looking for information has inherited from the agriculture age and from the industrial age. Agricultural age attributes are, among other things, a logic of “ways and means”. The literature on looking for information, very often starts from given data (not clearly from needs) and easiness. Industrial age attributes are, among other things, a logic of “results”. As for the industrial age, the various elements like controlling, standardization, lowering the risks, or scientific organization are often the basement of modern looking for information.

Information is sometimes considered as a given object, sometimes as a process [Guilhon, 2005]. Where does looking for information starts and where does it stops? Looking for information is sometimes presented as a separate task, overlapping with another distinct task or inextricably combined with another task. It is very common to meet the seeking and use combination [Choo, 2001 ou 2007; Kuhlthau, 2005; Bates, 1999]. It is rarer to meet seeking and questioning [Frion, 2009a].

Many authors on looking for information literature concentrate on technical subjects and on the organization. Information behaviour literature is surprisingly often ignored by authors who focus on technical subjects and the organization. Therefore, the literature on looking for information seems to be separated in two distinct categories: one includes the human side of the question with Achard in France [Achard, 2005] and the information behaviour school more generally with Wilson for instance [Wilson, 1999]. Another one focuses less on human traits and focuses on organizations and tools. Most of the time, looking for information literature is limited to one or to a few aspects of looking for information. How are we going to evaluate effectiveness and efficiency? Only looking at one specific topic as Descartes would suggest? Are we going to avoid separating things as Ockham would suggest? Efficiency and effectiveness will also depend on this choice-implicit or explicit choice.

A cornerstone question arises here: what is the use of looking for information and how shall we organise it? Does looking for information include sense making? Many authors suggest looking for information is not separated from using information, like Choo, and Lesca, or Dervin and Weick (with different approaches).

In many articles, particularly in French CI literature, looking for information is described separately from other tasks. The English and American information behavior literature is clearly in the information needs seeking and use (insu). When integrated to another task, looking for information is rather associated with the treating side. For instance, organizations seek and use information in order to understand and enact their worlds [Choo, 2007]. There are stages in information seeking [Kuhlthau, 2008], therefore, in order to be effective or efficient, it means that all the stages have to be respectively effective and efficient?

According to the Competitive Intelligence approach with the integration of five main competencies, we have:

- questioning (problem formulation);
- acquiring (retrieving, seeking,);
- treating (use, analysis);
- distributing (sharing, stocking);
- and protecting (controlling, limiting accesses);

There will be "competitive intelligence" in a firm when coordination of theses skills and actions will be achieved ahead of the project. So is the Information Literacy approach with the integration of key skills. Therefore, does it make sense to assess effectiveness and efficiency for one task only?

Seeking and use are sometimes together [Choo, Wilson, etc.] in information sciences, and in business studies, theses two tasks are often distinguished.

Looking for information, information searching, information seeking, information retrieval, and other terms are often studied with no precise spectrum of task. Where does looking for information start and where does it finish?

The information Cycle

In the most used method in Competitive Intelligence across the world, in the information cycle, there is a clear distinction between the needs assessment, or questioning, and the task of collecting, or seeking information. See figure 3 for a simple representation of a 5 step cycle, according to Miller [McGonagle, 2007].

Bulinge offers a very thorough presentation of the information cycle and puts forwards its limits [Bulinge, 2006]. Clark (Clark, 2003 and 2004) and McGonagle (McGonagle, 2007) also point out the

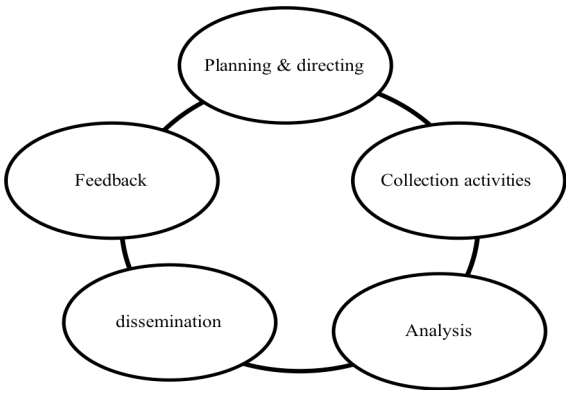

Figure 3: 5 step cycle [MILLER, 2007]

limits of the information cycle. Even though the information cycle comes in different flavours, there is a close relation between these different steps, spread in 4 or 5 steps (see a detailed 4 step presentation in figure 4).

Still, they remain separated. Sometimes different teams of people dispatch the questioning task for managers from the collection of information devoted to operating people. There is also another specific step in the information cycle, which catches the attention of most competitive intelligence authors: information treating, analysis, validation, etc. As far as the information cycle is concerned, competitive intelligence authors and professionals set up the starting point of looking for information with a strategic intent and a strategic questioning [Frion, 2009a]. Sometimes the information need will end up to a highly engineered and unique information seek in a short period of time [Frion, 2002]. More often on the contrary, there will be an ongoing watching structure organised to watch and monitor information in the short, medium and long run with authors like Dou

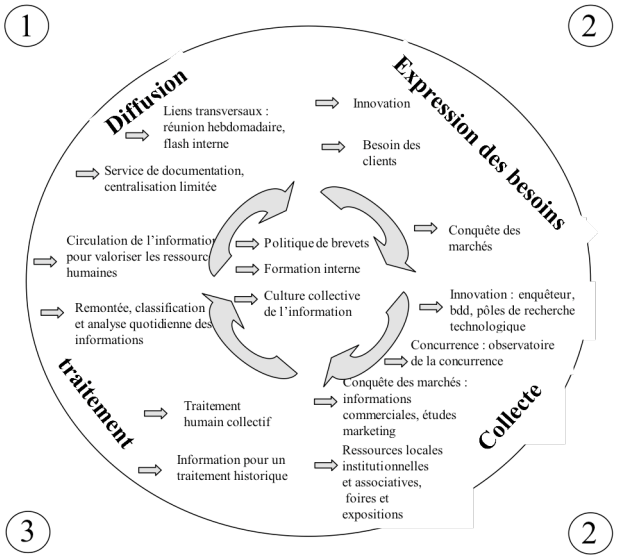

Figure 4: 4 step cycle [GUSTAVE, 1999]

[Desvals & Dou, 1992; Dou, 2008], Lesca, and Fuld for instance.

It is therefore a choice to decide when looking for information starts and when it finishes. For instance, can we say that the maïeutics of Socrates is looking for information?

Further, when data is already there on the desk, on the screen, or in the office, the effectiveness and efficiency is more in manipulating data or information than looking for it? As soon as the information is present there is no clear distinction in the vocabulary used between managing present information and acquiring absent information. Managing skills are different from and complement the exploring skills. In the literature, looking for absent information is often seen as not separated from treating present information. Many examples can be read in Aguilar, Bulinge, Choo, Dou [Desvals & Dou, 1992; Dou, 2008], Lesca, etc.

There seem to be an implicit agreement among authors of this subjects to integrate looking for information in a larger system than just picking data on the Internet for instance. Completely rational decision making requires information gathering and information processing beyond the capabilities of any organization. In practice, organizational decision making departs from the rational ideal [Epstein, 2007] in important ways depending on [Choo, 2001]:

[1] the ambiguity or conflict of goals in the decision situation [goal ambiguity or conflict], and

[2] the uncertainty about the methods and processes by which the goals are to be attained [technical or procedural uncertainty].

There are so many ways to present the activities of looking for information that efficiency and effectiveness will have to be specified for each situation. It is time now to turn to the presentation of efficiency and effectiveness.

3 Efficiency and effectiveness

What is an efficient looking for information? What is an effective looking for information?

In figure 1, the classic information retrieval model [Bates, 1989] tells us that an effective search occurs when keywords match. Today with the increasing use of digital searching, the keyword matching is increasingly becoming a big issue in looking for information. The good keywords show us the access to the existing information we wish. Nevertheless what is the relevance of matching keywords if keywords are not precise? Is it efficient? Is it effective?

Efficiency and effectiveness depends on various considerations.

3.1 Effectiveness

Literature tells us what is an effective looking for information, throught some topics and throught selected citations:

- Relevance. Random search, Adaptavive Random Search, are presumably not efficient, nor effective, but sometimes rather relevant;
- Evaluation of the looking for information, not information quality;
- Utility;
- Opportunity cost;
- Reliable [Fuld 1995, p373];
- Performance;
- Knowledge productivity;
- connect metatheory to method [Dervin, 1999];
- physical, affective, and cognitive [Kuhlthau, 1991];
- creativity [Fuld, 35];
- context in which competitive strategy is formulated [Porter, 1985];
- simultaneously information-seeking and belief-forming social systems [Choo, 2007];
- the user's needs;
- user's satisfaction;
- collective sense-making [Lesca, 2003];
- learning curve and information literacy;
- credibility of the information sources [digital, print, people sources];
- cultural perspectives, beauty of the act for french people, pragmatism in anglo-saxon world, etc.

3.2 Efficiency

Literature tells us what is an efficient looking for information, throught some topics and throught selected citations:

- no waste, principle of least effort;
- time saving on collecting information to concentrate human ressources on analysis [Porter, 1980];
- the time available and if it time consumming;
- too much attention to them [market signals] can be counterproductive [Porter, 1980, p. 86];
- consulting information deserves meticulousness, rigour, will;
- the available ressources, sources of field data [Porter, 1980, p. 278];
- the quality requirements in a repetitive decision making;
- business survival or business development, etc.

Most specifications so far belong to the acceptance pardigm. If we select another paradigm,

efficiency/effectiveness will see another point of view.

Each science bears its own criteria for effectiveness and efficiency. For instance, in business studies, looking for information should lead to a result-oriented performance: the good information to the right person at the right time [Porter 1985]; in behavioral sciences nature of the human communication is at the heart of the process [Dervin, 1999].

Efficiency and effectiveness will be subjective. We suggest that strategic looking for information must not be get started before philosophy, aproaches, models, methods, technics, context, ressources, cognitive styles, etc. are investigated.

Looking for information should not be settled once and for all. It should be the choice of a succession of convergent and divergent approaches in a multi-stage working session over time. This general concern would firmly root into behaviors.

The terminological inventory of the looking for information literature vocabulary would have to be corelated with the competitive intelligence classical process. Indeed, this study is not restricted to the first two steps of the process. It also stread over the treatment step and the distribution step. The reason why is in these last two steps, final users are not the ones who have collected or looked for informaiton. Figure 5 shows us an example of the terminology that can be used in a classical full process in competitive intelligence.

In his 423 page long book on looking for information (Case, 2008), Case do not select the words effectiveness nor efficiency in the subject index. He is presenting a 9 page list of words like: motivation (18 references), utility of information (14 references), avoidance (10 references), encoutering information (9 treferences), content analysis and metatheory (5 references), noise in information theory (3 references)etc. He is also using unique reference words like: blind persons, grazing, infotainment, taboo, zapping, etc. Are these two subjects-effeciveness and efficiency-not important in looking for information?
We believe these two subjects are important and suggest a new approch to consider them.

3.3 Behond efficiency and effectiveness

Figure 1 shows us the clasic search model without reference to effectiveness nor efficiency. Indeed this model implicitely suggest tu use the maximum variety theory. As a social fact, maximum variety is used in radio and tv programs to allow a large variety of points of views to comment the news. With the maximun variety theory, are we in the field of commentary, redundancy or information?

Looking for information can be efficient and effective. However, what is the point of accessing information? From effectiveness and efficiency we have to turn to relevance, accuracy, profundity, availability, reprensativeness, performance, objectivity, etc.
Efficiency and effectiveness will depend beforehand on the type of ground they are used and also depend on the purpose to be achieved.

No more naîve searching, no more naîve seeking.

Information existence

Implicitely, most authors consider that information exists.

In information sciences, the information is a raw material and use "information recorded" [Bates, 1999; Metzger, 2002]. Daft and Weick, use the term "discovery" for looking for information [Choo, 2001] which implicitely accepts the pre existence of information.

When we consult existing information, there is a consencus on suggesting to covert a large spectrum of available information. As in a bayensian context, more information provides us with a better understanding.

If information does not exist yet, looking for information will turn to people sources [Fuld, 37 and 418] and weak signals [Aguilar, 1967; Lesca, 2003] with prior engeneering rather than posterior treatment. Sources will not be as numerous in this situation of lack of available information.

Information skills put forwards in the looking for information are mainly concerned with managing information, treating and manipulating information, reiteratedly. There is no mainstream literature on skills to create tailored-made information on the spot for a one shot situation. As long as looking for information will stay in the information acceptance situation, the problem of looking for information might remain unchanged.

Efficiency and effectiveness are usually considered for the result of the information seeking and the methods used to look for information. There was no literature on competitive intelligence found that coverd the philosophy of looking for information. Now it is time to turn into meta consideration about looking for information and identify various points of viex concerning information. Efficiency and effectiveness will be specific for each case.

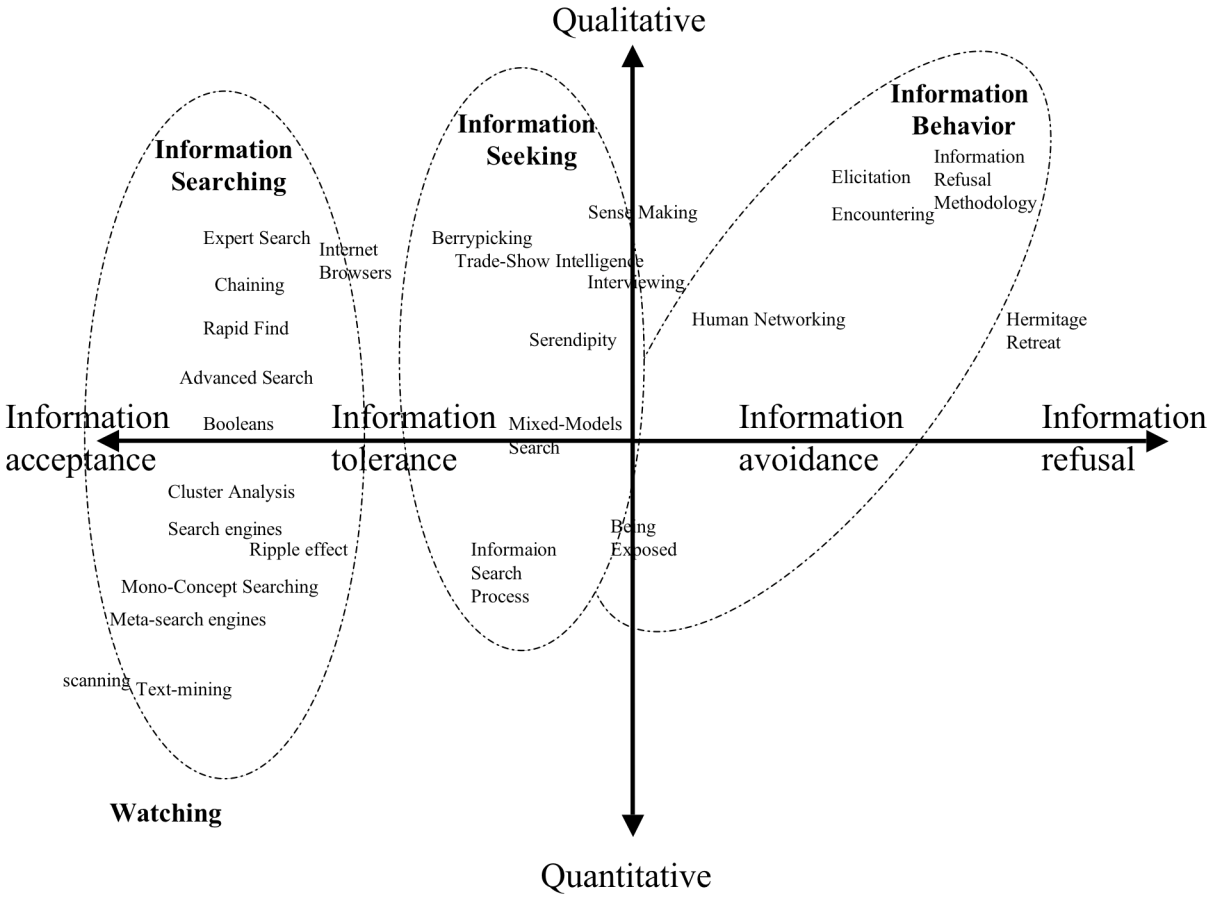

Figure 5 : **Typology of Information looking for on the spectrum from acceptance to refusal**

4 From information acceptance towards information refusal ?

A familiar saying states that "Wealth does no harm". It is clear that some authors seem to implicitely diverge from this idea. Information wealth can harm and it is sometimes claimed that the quantity of information is not necessarily positively related to quality.

A four-level spectrum is suggested:

- Information acceptance;
- information tolerance;
- information avoidance;
- and information refusal.

Going through these four levels will provide us with some specific criteria. Efficient / effective looking for information, will therefore be able to be evaluated with regards to the point of view we act.

Information acceptance

Information acceptance is a philosophical statement which leads to a implicite range of tasks. It is an enjoyable behavior for which information appears as being fully considered as a necessary [raw] material. There is a liking for information. The risk aversion suggests to access and to scan available information to lower the risks.

Information exists by itself as a starting point and is available. Information is a given, it is « already there » (as Le Moigne usually puts it), seperated from the question. Quantitative approach: more information is better. Information will be filtered and refined. Command formulations are sometimes of this kind: ”Give me all you have on this topic”, ”I want a full statement”, ”I want to know everything”, ”Every little bit of information counts”, ”Let me know as soon as you can”, ”I want a real-time update on this”. All theses sentences reveal that information is taken as a raw material, which has to be refined throught a separate process that just collecting it.

Information acceptance is an open door to scanning and watching structures, rather than projects-based appoaches .

Information searching, internet inquiring, data bases quering, text-mining, data-mining, environmental scanning [Choo, 2001], technical watching [Desvals & Dou, 1992; Dou, 2008; Rodriguez, 2000] etc. mainly belong to the information acceptance. Pre-conceived ideas are considered as non professional. This is a system-oriented approach [Vakkari, 1999]. The information acceptance moto could be: "Information first".

With an information acceptance approach, efficiency will mostly depend on the theory of maximum variety in accessing channels and people sources.

With an information acceptance approach, effectiveness will mostly depend on the feeling of not forgetting any point of view.

Information tolerance

Information tolerance is a ehavior for which information is welcome for want of anything better. Most information acceptance caracteristics are present except the liking for information. Information seeking, serendipity, information filtering, technical watch browsing, collective intelligence [Lesca], Sense-Making [Dervin, Weick for different approaches] mainly belong to the information tolerance. The regret aversion [Van Dick and Zeelenberg, 2007] is not as strong as with information acceptance.

This is a user-oriented approch [Vakkari, 1999]: there is no need to give a lot of information to his boss because he will not read it. Factual information are considered as neutral question [Just-give-me-the-facts attitude]. Common discussions are sometimes of this king : "We never know", "Who knows", "In case it might help", "For my information", "To whom it may concern", etc. Information push is prefered to information pull, in a concern not to miss anything important.

With an information tolerance approach, efficiency will mostly depend on the feeling of

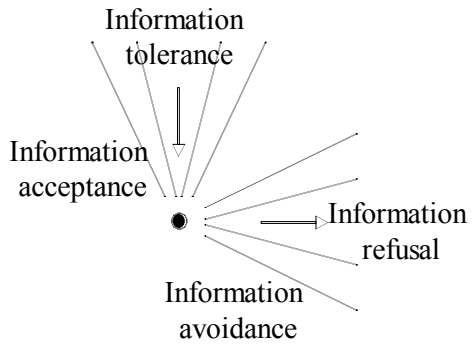

Figure 6 : Convergent and divergent approaches to look for information

selecting the useful information.

With an information tolerance approach, effectiveness will mostly depend on the use of the information in the general thinking process of the person.

Information avoidance

Protective belief. Information Searching In Context [Isic] prevents a person to look for some available information fearing to dislike what could be found. In medical science there is a tendency to avoid disconforting information [Case, Johnson & Allard, 2005]. Information is not blind trusted. Information strategic looking for 'multi-stage methods' (Dervin Sense-making), Kuhlthau's Information Search Process [Kuhlthau, 1991], Ellis [Ellis, 1989]), inductive approaches, seem to belong to the information avoidance. There is no regret not to know some information as much as the satisfaction to concentrate on some aspects of our curiosity. This is not so much a risk aversion rather than a risk taking belief.

Relation to information delivery with be concerned with sentences like: "only give me the Key Intelligence Topics". "Give me the saliant points". "What is new". "Give me a one page memo on this". It is a qualitative approache.

Information avoidance is naturally reluctant to structure a heavy organization to scan and watch information on the long run, and rather suggests projects-based appoaches.

With an information avoidance approach, efficiency will mostly depend on the subjective feeling of being in charge of the information selection.

With an information avoidance approach, effectiveness will mostly depend on confort for the person in charge of looking for and using information.

Information refusal

Methodological statement in reaction to information overload and to call the progress paragidm into question. Information availabity is not the point. Information push is not accepted as an information ideology. Constructivist behavior for which the information is not the cornerstone of the task. Actual context and expectations formulate questions and test the environment, using information to fill information gaps. Problem formulation is refined along the way, as well as information lacks and needs. Risk taking is assumed and information is tailor-made, sometimes largely invented. It is a cognitive process within which less information is better. Priority is given to visions, wants, bounded rationality, etc.

Cognitve bias and emotions are taken into account and must be investigated and "tamed" a little bit, before letting the information getting into the arena. No explicit methodological information refusal has been published in international scientific literature so far. Blue Ocean Strategy [Chan & Mauborgne, 2005], Black Swan Strategy [Taleb, 2007], Mixed Methods Search [Plano & Creswell, 2008], artificial sciences [Simon, Le Moigne] is related to the problem of information refusal.

Sentences we can hear with this attitude are such: "Hang on a minute", "I need to take a step back", "I need a break", "I need to defocus", [Neugarten, 2008]. People value more the strategic aspects of their projects rather than the available

information. Information is of no use in itself. The information refusal motto could be: "purpose first".

With an information (methodological) refusal approach, efficiency will mostly depend on the strategic questioning from needs to projects formulation.

With an information (methodological) refusal approach, effectiveness will mostly depend on the time that has been saved, not reviewing available information.

steps	Description	Actors
(1) Identification	Definition of the objectives, information needs, identification of the formal and informal informaton sources formelles et informelles (publications, congress, databases, trade shows, experts)	Information watchers, Information officer, librarian, Users
(2) Collection	Collect all the possible information with a variety criteria (internet and databases downloads, reference repports, summuries and articles)	Information watchers, Information officer, librarian, Users
(3) Treatment	Going through available information, homogenization, and presentation of the informations (local databases creation by subject, hierarchy and organization of the information)	Information watchers, Information officer, librarian
(4) Distribution	Distribution to the experts of the field, to evaluate, analyse, validate the informations	Information watchers, Information officer, librarian
(5) Evaluation, Analysis,	Evaluation and analysis of the informations in order to prepare and present syntheses	Information watchers, Information officer, librarian, Users
(6) Validation	Checking, consolidation, assessing the reliability of the informations	Users
(7) Use	Decision making and action plan (technology acquisition, product development)	Utilisateurs
(8) Conservation	Storing and archiving information (sources, result, decisions)	Information watchers, Information officer, librarian, Users
(9) Update	Updating synthesis	Information watchers, Information officer, librarian

Figure 7 : 9 classical steps to look for information in Competitive Intelligence

5. Discussion over a suggested typology and limits

With this exploratory study, we noticed in the literature that the various ways to look for information where supported by different approaches of information. Efficiency and effectiveness, must therefore be respectfully different.

In Annex 1 (table 1), we tried to compute different existing typologies, presenting three main categories:

- consulting existing information;
- provoquing information;
- and inventing information.

This first attempt has been done without a great succes and needs to be impoved. ”Are emotions the antithesis of information seeking and use, as has

been traditionally assumed?" [Dervin, 1999]. In a post industrial world, will people keep away from their emotions relatively to information?

We suggest a behavioural typology that will help us in assessing effectiveness and efficiency in looking for information:
- information acceptance;
- information tolerance;
- information avoidance;
- information refusal.

Each person, looking for information could select the most appropriate approach, select the acording models, methodologies, techniques, and therefore would benefit from straitforward efficiency and effectiveness specifications.

One aspect of information has not been found in the literature dedicated to competitive intelligence so far: the difference between information, and being informed. The former is rather external to a person but not exclusively. The latter is largely internal to a person but not exclusively.

In a previous study, the authors of this article noticed an internetization of the looking for information, and also a Googlelization of the internetization [Frion, Moinet & Samier, 2007]. We notice the increase of a single approach in looking for information, often limited to the internet. If a unique methods may be efficiently done, we can not subscribe favorably to this lack of methodology.

In this article, we only skimed over a couple of subjects related to the problem of looking for information. We did'nt intend to develop the subjects like risk reduction and risk taking. Is it more risky to treat non-chosen existing and available information (information acceptance) or to spend more time on selecting specifications to pick up or invent absolutely necessary information (in a methodological refusal of information aproach)?

In term of vocabulary, the issue of information has been globalized, when it could have been distinguised in many ways (signs, signals, data, knowledge, intelligence, and the french word "renseignement", etc). For the purpose of this article the term of information has been chosen as a given, and the action of getting informed has been rather left aside. Getting informed is not limited to getting information from the environment. This last point has been underestimated in the competitive intelligence literature so far.

One more field of investigation on this subject would be the decision topic: decision formulation, decision helping, decision taking and decision making.

It would also be instructive to expend more literature exploration to information sciences, culture [Koch Parente Verville, 2008], psychology, philosophy, information management and to management at large. Indeed, there is a question that the authors do not want to develop here. That is how a person who is missing information can formulate a precise enough question or a precise enough need ?

This paper is presenting four points of view of information, that have been artificialy separated in order to be presented. In the real word, they complement each other. Nevertheless, some further research will have to be launched to investigate the human capacity to switch and to compose with different mindsets about information. Can we accept information, tolerate, avoid and refuse in others? What kind of effectiveness and efficiency can we achieve with a large variety of ways and means to approach information in a company?

Finally, why should we look for information? Efficiency and effectiveness will also depend on the purpose of our actions. Many reasons can be listed, to look for information among which:
- answering a precise need such as solving a problem;
- getting unstuck, finding ideas (getting out of an unconfortable situation);
- answering a vague need such as learning, being cultivated, self-actualizing his knowledge;
- to keep oneself informed, to make inquiries about something;
- complying with social behaviours (knowing as much as others know);
- filling an emotional lack of information [fearing to miss important informations];
- following a "have to" ideology (we have to stay tune) etc.

For sure, efficiency and effectiveness in looking for information is still to be investigated further, in order to suggest behaviours, approches, models, methods and technics for firms.

6 Conclusion

Looking for information has been investigated with so many original points of views that all these contributions give us a vague picture. We could say "vagueness by the abondance of information". Are we still looking for information when we can consult it at hand? Is this effeciency? Is this effectiveness? Is this still looking for formation?

Getting to know, understanding and using more appropriate approaches, methods and techniques in looking for information, will provide the firm with a higher degree of liberty and will give people with better skills.

For sure there are plenty of different ways to look for information. Effectiveness and efficiency must be analysed as a consequence of former choices. Different levels of effectiveness and efficiency will hopefully be obtained accordingly to prior selection of information acceptance, information tolerance, information avoidance and information refusal.

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Annex 1 - Table 1 – First attempt to compute existing typologies and specifications in looking for information

Looking for main categories	sub-categories	comments	Information exists (y/n)	Information is white, grey, black (w/g/b)	Quanti Quali Mix (qt/ql/mm)	Ingeneering (y/n)	reproductibility automatiquely (y/n)	Number of needs formulation(s)	Necessity of the availability of information (y/n)	Work on the side of 'information, task or need (i, t, n)	Kuhlthau: affective (feelings), cognitive (thoughts) physical (action). (a, t, p)	Pility (system oriented, user-oriented , actor-oriented (s, u, a)
Consultation	- existing document	Access to a known well of information	y	w	qt	n	y	several	y	i	p	s
	- berrypicking	Collection of what is available	y	w, g	qt	n	n	1 +	y	i	p	s
	- watching, scanning	Update of what is available	y	w	qt	y	y	1 +	y	i	T et p	s
	- maximum variety theory	Sample with a lot of chance	y	w	qt	n	y	1	y	i	p	s
	- vectorial, boolean, probabilist	Presentation of what is available	y	w	qt	n	y	several	y	i	p	s
Provocation	- Socrates maieutics	People source	n	g	ql	y	n	several	n	n	t	u
	- personal thinking	imagination, memory	Y, n	g	ql	y	y	several	n	n	A, t	U, a
	- integration, association	« Asian » approach	y	W, g, b	ql	y	y	several	y	t	t	S, u
	- Acrie questioning plan	Inventive modelling	n	g	ql	y	n	1 +	n	T, n	T et f	a
	- expert	co-production	n	g	ql	n	n	several	n	T, n	A, t	U, a
	- puzzle	Collective Intelligence	y	W, g	qt /mm	y	n	several	y	T, n	p	S, u
Creativity	- brainstorming	Collective Intelligence/ imagination	Y, n	G, b	ql	n	n	1 +	n	T, n	T, p	U, a
	- black swan	Looking forthe higly improbable	Y, n	G, b	ql	y	n	permanent	y	n	t	a
	- Acrie seeking plans	Inventive situations	n	g	ql	y	n	1 +	n	T, n	T et f	a
	- concertation	Creative governance rather than administravive	Y, n	W, g	ql	y	n	1 +	y	T, n	t	U, a
	- expert	Co-production, need modification , tailored made information transfert	Y, n	g	ql / mm	n	y	1 +	n	T, n	A, T	U, a
	- scenarii	Sherlock Holmes	y	G, b	ql / mm	y	y	1 +	y	n	A, T	a