Strategies of Research on the Web: A Netnographic Approach

Fernando Colmenero-Ferreira–CREG –IAE des Pays de l'Adour
Domaine Universitaire
Avenue du Doyen Poplawski
64 012 Pau Cedex
e.mail : fernando.ferreira@univ-pau.fr

Christophe Benavent – Professeur Université Paris X
200 avenue de la République
92 001 Nanterre Cedex
e.mail : christophe.benavent@wanadoo.fr

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Abstract

This study, supported by an inductive netnographic approach, aims to understand the strategies of the buyers' behavior in the research of information on the Web. For this objective a netnographic approach was adopted in each subject's natural environment. An innovative technique of data collection was applied. Even so, despite the enrichment of the methodology, several methodological difficulties had to be lessened, nominated at the level of the analysis of video recorded, little common in qualitative studies in the management area; and at the level of data interpretation, where it was applied to the techniques of writing grammar. An interpretation of the first results describes the process of information research as a Darwinian model, being constituted fundamentally for a set of personal micro-decisions. Another result is related with the durability of the process of information search. Thus, the durability seems to be more associated to the degree of interest or challenge of the task, than to the personal variability.

Keywords: Decision Strategies, Consumer Behavior, Netnography, Qualitative Methods.

Résumé

Cette étude, supportée par une approche netnographique inductive, a pour objet de comprendre les stratégies du comportement des acheteurs dans la recherche d'information sur le Web. Pour répondre à cet objectif une approche netnographique a été menée dans l'environnement naturel de chaque sujet. Une technique innovatrice de collecte de données a été appliquée. Malgré l'enrichissement de la méthodologie, plusieurs difficultés méthodologiques ont du être résolues, notamment au niveau de l'analyse des enregistrements vidéo, peu courante dans les études qualitatives dans le domaine de la gestion; et au niveau de l'interprétation des données où techniques de l'écriture de grammaire ont été appliquées. Une interprétation des premiers résultats décrit le processus de recherche de l'information comme un modèle Darwinien, fondamentalement constitué pour un ensemble de micro-décisions personnelles. Un autre résultat se rapporte à la durabilité du processus de recherche de l'information. Les résultats obtenus suggèrent que la durabilité semble davantage être associée au degré d'intérêt ou de défi de la tâche, qu'à la variabilité personnelle.

Mots clés: Stratégies de Décision, Comportement du Consommateur, Netnographie, Méthodes Qualitatives.

1. Introduction

At the Internet Era, information search takes new forms and offers new challenges to the consumer. Contrary to an older era where information about product and service were delivered scarcely with poor content (mass media) and asked a strong cognitive effort to be processed, the modern information environment is characterized by overflowing information, with a rich content, and easily accessible. There is a great deal that the cost of information comes now more from processing than to search. The information processing problem for the modern consumer is more of a question of how to deal with very large amounts of information freely available, than to search it as it was the past priority.

This general change justifies new investigation in the field of consumer information and decision processing. And because this problem is new as a phenomenon, and concerns less and less a minority of people, an exploratory attitude is recommended to tackle this general problem. How could we describe this process? What are the main features of information search and evaluation that are used by consumers?

To answer these questions we adopted an ethnographic posture, which means observing and describing as close as possible what people do and think when they are performing a searching task. To conduct the observation and analysis of the qualitative content that we gathered, we need some concept and analytical grid. They will come from a literature survey that brings us back to the classic field of decision making, and the paradigmic opposition between the rational processes and the less rational. The concept of heuristics will be a key criterion of analysis.

This study, according to a netnographic approach, aims to understand more precisely how, in a pre-purchase decision, the consumers choose their strategies in the search, evaluation and selection of relevant information phases in the decision process of choice of a product or brand. More than a normative process, this phase appears constituted by the adoption of simplified strategies, many times referred to as heuristics, and a lot of times motivated by economic reasons of cognitive effort. However, the phase of search and selection of

information reveals itself as a decision process consisting of a set of micro-decisions. Identifying not only modalities and their patterns, but also the general process is critical.

So, it is of large usefulness to revisit the whole decision theory, that the origins retrace to the works of the mathematical philosophers of the XVII and XVIII centuries, among which appear Pascal and Bernoulli. In the most part of the cases, the choice problems should be formalized by the decision maker. Thus, this stage of analysis or rationalization allows justifying the choices more easily. For example, in a company, most of the strategic decisions are not taken arbitrarily and are the result, most of the time, of tables and graphs properly quantified, supported in a criteria and methods that allow one to legitimize the decisions. We will propose an analytical general framework.

The empirical study is a qualitative approach of the natural process of search generated by a quasi-experimental setting. The principle is to assign a task, then to observe directly and quasi internally the decision process. The observational setting indeed records in each and every event that appears on the screen with a video recording, and the comments of the subject.

Contrarily to the known studies applied in the ambit of netnography, where the source of data is essentially on the text form, in this study the obtained source is in video and audio format. Even so, this source is obtained directly on the computer screen without resource to the use of a video camera. However, this enrichment of the methodology created enormous difficulties, particularly the lack of knowledge of the existence of techniques or software for the analysis of the collected data. Thus, to help suppress this difficulty a set of techniques were assayed to help in the interpretation of the collected data.

The study was carried through in two countries, France and Portugal, not for reasons of intercultural comparison, but to control a cultural effect and look for some external validity. It aims exclusively at understanding the phenomena of choice and decision of the information through the buyers in their natural environment that each environmental personalization of each Web user profile dynamically creates in its computer's desktop.

Once explained the study method, (1) a justification of the buyers' chosen strategies of selection and choice of information emanates from the analysis of the netnographic observations, which will be suggested; (2) the durability of the process of search of

information when the task has to be solved seems to be more associated to the degree of interest or challenge of the task, then to a personal variability.

2. Some theoretical elements

Searching the web is like surfing on the ocean: time consuming and complex. Evidence gives the idea of a succession of decisions that orient subsequent actions. A deeper view brings the idea of a succession of action/evaluation sequences. The learning aspect is important. This micro-decision approach takes us back to the classical decision making literature.

2.1 The decision making odyssey

The problems of preferential choice are usually well structured, that is, the subjects are placed typically with a specific set of alternatives and a set of values in the attributes to use in the resolution of the problem. However, it is important to notice that problems of the preferential type often possess elements that make the solution difficult, for example, the conflict is usually present, in the sense in that no option is the best in all of the attributes' values and, as Shepard (1964) affirms, the conflict is recognized as the biggest source of difficulties in a decision. The task can also be a little familiar or unfamiliar, in the sense that a rule to solve the conflict cannot quickly be invoked from memory. Thus, to find the solution to decision problems is often not the type of process "recognize and calculate" associated with the experience in the ambit of a certain task, being also valid for the simplest tasks of decision that happen in laboratory (Chi, Glaser and Farr, 1988). Still, for Langley, Simon, Bradshaw and Zythow (1987), decision making is often characterized for actions of the type trial and error, and for the resource of the use of relatively crude methods, that they call heuristics, more representative of problem resolution for people without experience.

The presence of the conflict, and the fact that the rule of decision to solve the problem is not drawn directly from memory, it places the decision in the field of problems of preferential choice, that are generally used in the solution of problems, through the acquisition of information and evaluation more than simply the recognition of an answer pattern to the problem. What has been much focused on the research of the choice and judgment of human nature is the paradigm of information-processing. This paradigm is essentially focused on understanding the cognitive aspects (mind/brain) of decision making (Payne, 1982; Payne,

Bettman and Johnson, 1993; Luce, Bettman and Payne, 2001; Shiv and Fedorikhin, 1999). In this paradigm, the choice or judgment among alternatives is executed during the proper action, and what is in cause is the conflict that appears in the majority of choice and decision problems, where an alternative does not stand out as better than the other ones in all the attributes.

Simon (1955, 1981, 1990) captured the three key aspects of the paradigm of the decision research in the following points:

1. The theory of human rationality must be as concerned with procedural rationality - the ways in which decisions are made - as with the substantive rationality - the content of those decisions (Simon, 1981, p. 57).
2. In terms of models of the procedural rationality, the task is to replace the general rationality of economic man, with a type of rational behavior that is compatible with the access to the information and the computational capacities that the human being possesses (Simon, 1955, p. 99).
3. Human rational behavior is shaped by a scissors whose two blades are the structure of task environments and the computational capabilities of the actor (Simon, 1990, p. 7).

Simon (1955) considered that an important simplification in the decision processing was to stop the search after the first satisfactory solution to the decision problem was obtained instead of exhaustively looking for the best solution of a problem. A related idea is that the consequences of a decision are evaluated using a "payoff", where the results of a decision are seen as being relatively satisfactory or unsatisfactory to a point of aspiration of the decision or to a payoff. The dynamic aspects of the behavior of the decision can be captured by alterations in the point of aspiration of the decision or reference level. Although the heuristics of this simple type of aspiration level can frequently lead to satisfactory choices, they can also result in bias choices. The use of this heuristic type to lead in the selection and search of a solution, for example, means that the order where the alternatives are considered has a great impact on the chosen alternative. The use of a simple delineation of this type of aspiration level or reference point means that the decisions will not consider reasonable trade-offs between opposing objectives.

Simon (1955) started something of a small revolution, in the rational theory of decision making. Its innovative premise, in the concept of rational decision making, was supported in

the fact that the rational individual is very far from the supposition one in the economic theory of the rational man. Simon assigned the fact that the internal organization of companies and the managerial decision making, seemed to conform a little bit with the neoclassical theories of "rational decision making". Thus, he proposed a behavior theory based on a bounded rationality. According to Simon, individuals faced with uncertainty on the future and the acquisition costs of information today are conditioned to make completely rational decisions. Ergo, Simon affirmed that individuals only possess a limited rationality and are forced to make decisions fixing a level of aspiration that, if reached, will leave them satisfied, or they will try to change their level of aspiration on the decision.

2.2 Heuristics

What are heuristics? They were originally derived from the Greek "heurisko" (ευρίσκω, the verb from which Archimedes's famous exclamation of "eureka" was derived), which roughly means "I found it". Goldstein and Gigerenzer (2002) define heuristics using the definition from the psychologists Karl Duncker and Wolfgang Koehler from Berlin School, that had begun with the early experimental work on problem solving, whom have not made more than preserve the original Greek definition of "serving to find out or discover" when they used the term to describe strategies such as "looking around" and "inspecting the problem". For Duncker, Koehler, and a handful of later thinkers, including Simon (1955), heuristics are strategies that guide information search and modify problem representations to facilitate solutions. From its introduction into English in the early 1800s up until about 1970, the term *heuristics* has been used to refer to useful and indispensable cognitive processes for solving problems that cannot be handled by logic and probability theory (Groner, Groner and Bischof, 1983).

In recent years, however, the definition of heuristics has changed almost to the point of inversion. In research on reasoning, judgment, and decision making, heuristics have come to denote strategies that prevent one from finding out or discovering correct answers to problems that are assumed to be in the domain of probability theory. In this view, heuristics are poor substitutes for computations that demand too much from ordinary minds to be carried out. Heuristics have even become associated with inevitable cognitive illusions and irrationality (Piattelli-Palmerini, 1994).

However, the heuristic concept was to specialize relatively on the area of scientific knowledge where it has come to be used, nominatively, in psychology, philosophy, law and computer sciences in the last years. In computer science, a heuristic is a technique designed to solve a problem that ignores whether the solution can be proven to be correct, but which usually produces a good solution or solves a simpler problem that contains or intersects with the solution of the more complex problem. Heuristics are intended to gain computational performance or conceptual simplicity potentially at the cost of accuracy or precision. In this area of knowledge, as algorithms are information processors that surely conduct to a solution, heuristics are strategies adapted in poor information context. When we are not capable of computing the best solutions, and we cannot consider all alternatives, it is useful to get an efficient strategy.

Behavioral economics is an economic subfield with heuristics as one of its main arguments. This branch is closely related to fields which apply scientific research on human and social cognitive and emotional biases to better understand economic. The fields are primarily concerned with the rationality, or lack thereof, of economic agents. Behavioral models typically integrate insights from psychology with neo-classical economic theory. Kahneman and Tversky (1979) used cognitive psychological techniques to explain a number of documented anomalies in rational economic decision making. At the same time, the authors are responsible for the presentation of a set of heuristics that have become much known, nominatively: the representativeness heuristic, judgments influenced by what is typical; the availability heuristic, judgments based on what comes easily to mind; and the anchoring and adjustment heuristic, judgments relying on what comes first.

Gigerenzer, Todd and the ABC Research Group (1999) propose a different kind of cognitive heuristics based in fundamental psychological mechanisms, rather than a normative process model. The objective is to design and test computational models of heuristics that are (a) ecologically rational (i.e., they exploit structures of information in the environment), (b) founded in evolved psychological capacities such as memory and the perceptual system, (c) fast, frugal, and simple enough to operate effectively when time, knowledge, and computational might are limited, (d) precise enough to be modelled computationally, and (e) powerful enough to model both good and poor reasoning. They called this type of heuristics fast and frugal, in which the simplest heuristic is the recognition heuristic.

The strategies of information search on the web are diverse, but basically grouped in two great types: heuristic or analytical, although a search may be constituted of a mixture of the two. Marchionini (1995) defined a heuristic search as any low deliberation search, which relies on navigation through hyperlinks, and relies on recognizing relevant information. The analytical search is defined as a pre-planned search, which relies on search engines. These analytical strategies are deliberate and focused, and as a consequence require a conscious cognitive effort, contrarily to heuristic search that relies on trial and error.

Heuristic strategies are also called browsing strategies in much of the research literature. For example, Hill and Hannafin (1997) identified individual differences in search strategies; Pejtersen and Fidel (1998) identified browse strategies as one of the most popular used by secondary school children; and Tauscher and Greenberg (1997) identified Web browsing as a recurring system where users repeat activities they had invoked before. Marchionini and Schneiderman (1988) identified analytical strategies as strategies that depend on a carefully planned series of queries posed with precise syntax. Choo, Detlor and Turnbull (1998, 1999) indicate that analytical and heuristic searches are characterized by different navigational behaviors, or events.

2.3 Working on the web: an ecological processes

An assignable research about ecological rationality was developed by Gigerenzer et al. (1999) materialized in the Recognition Heuristic. Its behavior is apparently counter intuitive, showing the "less-is-more" effect: situation in which to realize accurate inferences less knowledge is better than more. One curiosity is that, in the statistical analysis of experimental data, the inexistence of data is uninteresting. However, out of the experimental field - when the data are obtained in natural sampling instead of systematic sampling - the inexistence of some knowledge can be used to do intelligent inferences (Gigerenzer and Hoffrage, 1995). How can more knowledge *not* be better than significantly less knowledge?

The heuristic works exclusively in cases of limited knowledge, i.e., when only some objects - and not all of them - are recognized. The apparently simplistic efectivity of the recognition heuristic depends of its *ecological rationality*, i.e., its ability to explore the information structure in natural environments. It should be clear, however, that the recognition heuristic is not applicable in every situation. The recognition heuristic is of the type *domain specific*,

meaning that it only works in environments in which recognition is correlated with the predicated criterion.

Russo (1977) said that people adjust their strategic decisions depending on the kind of task, thus, the decisions may to progress in quality through very direct ways, like small changes in the environment's information in which people have to take the decisions.

In spite of all the research in Internet usability, the inadequacy of tools efficient in the development of a favourable exploration of the web in order to obtain the necessary information in a fast and effective search becomes clear. It is noted, apparently without any exception, that the browsers basically facilitate two kinds of very elemental configurations, namely, the homepage and the inclusion of search buttons usually associated with one of the best known and most commonly used search engine. The exploration of information structures in the subject's environment. Finally, the construction of the environment may adopt a set of links stored in the Favourites. In this case, all the Favourites management tools that the most popular browsers make available are in the poorest level of usability.

Therefore, we noticed during our study that only 3 of the 24 subjects used links registered in the Favourites. At the same time, 44% of the subjects had one of the most used search engines as their homepages, and 38% possessed at least one button associated with some search engine. Apparently, a big difference wouldn't be noticed in the way the subjects realized their tasks if those had been realized in a standard environment.

It was verified that approximately half of the actions done by the subjects were the result of a cognitive or memory resource, and that, in the other half of their actions, the subjects made use of keywords or, in the most elaborated cases, of search methods so that they were successful in a faster and better way. The use of that kind of methods also represents a cognitive effort from the subjects.

A method is a mean or manner of procedure, especially a regular and systematic way of accomplishing something. Methods are for example: go to mappy.com for computing an itinerary between two cities, or looking at the regular bus company for the same itinerary.

Methods are for example: using a search engine, looking at a personal portal, connecting to a portal provider, using a link from the bookmark. They produce a variety of options, a categorized search as with Yahoo, or keyword search with Google. They could be general of specialized, as going to mappy.com for computing an itinerary.

3. Research Method: the netnographic approach

Ethnography is from a methodological point of view an observational approach that emphasizes a direct and inside way of gathering empirical materials. From the Malinowski (1922) point of view it is through a systematic examination of materials and immaterial elements (artefact, myth, rituals) that a general analysis of the population surveyed could be conducted.

A classical methodological problem is the interaction between the researcher and the subject of the study. Considering that people who are observed integrate the observation in their everyday life, they could instrumentalize it to get more power, recognition and anything else. A second common problem is the question of interpretation, even immerged fully in the "milieu", the researcher could apply some concepts that are nonsense in the local culture. Some authors recommend thinking inside which means using a local concept to build an interpretative schema. That is the sense of ethno methodologies.

Our approach brings these two features: observing inside, and giving to people the opportunity to comment what they are doing in respect of the natural condition of acting. In our study, these materials were recorded on the personal context.

That is the reason why we refer to these nethnographic analyses following the terminology adopted by Kozinets (1997). We changed slightly the orthography, adding an H to the original terms forged by the former author. This change satisfies two requirements: the first one is, as Kozinets used this term to assign an approach that uses internet media to reach people and interact with them (network approach), the need to differentiate from him because our sole purpose is to observe directly a search experience; the second one is related to the fact that we

adopted an anthropological posture, looking at what people do in their natural context. We are a long way from the laboratory situations where the experimentator controls the tasks.

3.1 Netnographic approach

Netnography is a qualitative marketing research method (Kozinets, 1997, 2002). This method was presented for the first time as the adoption of the ethnographic techniques to the Internet, for the study of cultures and communities that emerge through the systems of computer-mediated communications. So, just as in the classic ethnographic methods, where a symbiosis between the technique and the art is required in the method application, it demands at the same time the use of a considerable dose of talent, nominally at the level of empathy on the part of the observer and in aiming at deciphering the really pertinent comments (Arnould and Wallendorf, 1994). Compared with other qualitative techniques like the focus groups and in-depth interviews, netnography, besides being simpler and of fast application, is much less obstructive, as it is driven using the consumers' observations in a context that is not manufactured by the researcher in the marketing domain, and supplies a vision of the natural behaviors at the same time as they happen (Kozinets, 1997).

The reason of the interest of marketing for this recent research method is associated with the increasing importance of the Internet as a transaction channel of goods and services, as well as at the same time, with the gain of importance on the part of the brands (Kozinets, 1999; Muniz and O'Guinn, 2001). Simultaneously, many anthropologists, sociologists and qualitative researchers, had claimed the need of adapting the existing ethnographic research methods, to the many cultures and communities that had emerged with the Internet (Escobar, 1994; Grossnickle and Raskin, 2000; Hakken, 1999; Jones, 1999; Kozinets, 1999; Miller and Slater, 2000).

Ethnography is an anthropologic method that assumed enormous popularity in sociological, cultural, consumer studies and other scientific fields. The term refers to the field work and the study of different meanings, practical and artefacts of specific social groups. Ethnography is inherently practical open, and is based on participation and observation, where the nature of flexibility represents one of the biggest forces of its application. The resource to the ethnographic approach for studies in the consumption area is part of a tradition already

properly established (Arnould and Wallendorf, 1994; Belk, Wallendorf and Sherry, 1989; Mintzberg, 1973; Sutton and Rafaeli, 1988).

Arnould and Wallendorf (1994) assign that the characteristics of the ethnographic approach seem to well correspond to a epistemological posture, particularly: the primacy given to the facts and activities in real situations, the experimental participation of long duration in specific universes (and not only of observation), and the fact that the process of data collection is dictated by the dynamics of the phenomena studied and not predetermined in a rigid way. They assign the dynamic nature of the ethnographic approach while accentuating that ethnography is not only one technique of data collection, but also one that tries to clarify the forms as well as the cultures (or the micro-cultures), how they are built and, simultaneously, how they are formulated by the behaviors and human experiences.

3.2 Study field

The analysis of the buyers strategies of selection and choice of information proposal here is based on a netnographic study carried out during 2005, in Braga (Portugal) and Pau (France), surveyed with 24 people (12 professors and 12 students). Despite the variety of study places, the choice did not have any logical objective of sampling and any comparative intention also did not exist. Ergo, the objective of the study was not to compare the strategies of decision in two different countries, but to look at a general understanding of the phenomena.

3.2.1 Collection and data analyses

The data collection consisted of sessions of observation of participants in the process of collecting and selecting information for the consumer, in the execution of four real tasks of purchase. However, the tasks were suspended in the last step of the process, precisely before the confirmation of the purchase. All the tasks were executed in the subjects' computers, using their own environments. In each subject's computer a software for recording video was installed (format .avi). This recorded the entire sequence of actions executed by the subject from the beginning to the end of each task. These registers were deposited in a computer external hard disk, tied by a standard USB port. Contrarily to the usual netnographic studies, where the register for analysis and interpretation has been basically textual speech, in this

study, the result is a set of 98 video clips (image and sound) of the computer screen from the subject, during the undertaking of the task, and recorded in the proper computer. Thus, the whole activity of the subject in its own natural atmosphere is recorded. These recorded videos, of maximum quality of image and sound, obtained without resource to the video camera, completely transparent for the subject and as such, do not introduce conditioning psychological factors. The set of the 98 video recorded lasts 13 hours and 25 minutes.

One of the great limitations of netnographic studies is that it is unlike the classic ethnography which resided in the fact of they being fundamentally based on text. Thus, important information was lost, such as the verbal emotions (Dholakia and Zhang, 2004). Even so, as it is assigned by Bernard (2004), as the method is going to be applied for one and others, it is going to improve, modify and enrich itself.

To each one of the subjects, after the software was installed with the function to record the video, as well as the connection of a computer external hard disk where the video was stored, the following tasks were applied:

> "For each task no time restriction exists. The objective is to find a good solution. The important is the effectiveness of the task. However, the time used in the materialization of the task will be collected to measure the efficiency of the execution of the task, in spite that this measure is not important.
>
> The execution order of the tasks is not important; any different sequence can be chosen.
>
> Comments on the most likely decisions adopted.
>
> 1. To find the itinerary from the city of Paris in France to the city of Hamburg in Germany.
> 2. The anniversary of one of your friends is approaching. You know he likes the actor Tom Cruise; find a DVD to give him.
> 3. At this moment you have 1.000€ for a holiday. You are leaving the following month. Find the holiday that you would be most satisfied with.
> 4. On this occasion you have 2.000€ to buy a laptop computer. Find the computer that you would be happiest with.

3.2.2 Participant observation and material collection

As it is assigned by Arnould and Wallendorf (1994), the fundamental device of the ethnographic survey is the "participant observation" that consists, according to Bogdan and Taylor (1975), in a survey characterized for a period of intense social interaction between the researcher and the subjects, in the environment of the latters. In the extension of this period, the data is collected systematically. The observations personally immerge into the life of the individuals, sharing their experiences. The interest of this technique of data collection is, according to Arnould and Wallendorf (1994), to allow the observer to acquire a "member knowledge" trying to identify the reasons that take the individuals to their behaviors and to establish what the acts mean for them in the act of its production. The pertinence of this collected information technique that allows more to understand (what it means an empathy with, a capacity to see the things from inside) than simply to explain (that it sends to a casual analysis) the subtle behaviors of the actors, in the ambient of complex organizations, was understood with Bryman (1989). This pertinence is manifested for the open and not selective approach of the participant observer, who has the task of catching everything that he can, with the best precision possible, but without a selection to priori.

Each one of the sessions of participant observation was recorded in video (format .avi), on which all the information observed is stored. The use of the video recording allowed to find, in the period of the data analysis, a live memory of the events. That is to say, the recorded video has as first consequence the possibility of the repetition of the event for observation, the number of times that we want or it is necessary.

The videos are, more and more, part of the researches of qualitative approach, particularly, in the domain of anthropology, sociology, psychology and neuroscience. In the same way, it is noted that the number of qualitative works where at some point is included video registration is remarkable. However, in the specific area of management, more precisely in that of marketing, for lack of better information, these studies are practically inexistent. According to Collier and Collier (1986), the film and the video had become essential for the study of the human behavior.

The video provides a fabulous memory and at the same time a memory of past experiences in that the content remains in its original state (Mehan, 1979). Consequently, the analyses can be more complete than obtained with the standard observations (Erickson, 1992). The scenes can be repeated as many times as the researcher needs whilst they reflect on what happened, reducing the possibility of inferences and premature conclusions. Erickson (1992) is also strongly convinced that the normal field of observation tends to emphasize events that frequently happen, however there are other events that also happen and that cannot be properly analyzed. Even so, with the video record of an event, be it rare or common, this can be observed and explored repeatedly.

The video records are usually made to thirty frames per second allowing the micro analysis of behaviors to be observed indirectly, through the comparison of the individual frames of the event. Thus, the details can be more quickly and easily ordered into categories. At the same time, the video records help to categorize all of the details through the repeated visualization of the scenes. Many other things can be made with the video records which are not possible through normal observation, such as, complex editions with the aid of computers, allowing for analyses incredibly complicated that could not be carried through in another way. The video also records details not observed by the human eye as latent aggressive and affectionate gestures (Ball and Smith, 1992). The videos can also reveal new variables and thus provide new questions for new interviews (Collier and Collier, 1986).

Sound also can be a crucial element in most qualitative researches. The human voice communicates as many meanings, as distinct points of view. Thus, the sound that attends the images can be a central element to complement the records' visual data.

3.3.3 Process of data collection and codification

Different to the general process of inquiry and analysis where a permanent interactive process coexists between collection, codification and analysis, here, the general process is diachronic, or either, the analysis of the material was accomplished to the *posteriori*, once finished the data collection. Thus, the data analysis consists of one going and coming permanently as it is marked in the model of Arnould and Wallendorf (1994), among observations, analyses, interpretative codification and mobilized theory.

Collier and Collier (1986) believe that the analysis of data in the video record has many advantages when compared to other types of analysis of qualitative data. Important segments can be seen repeatedly in detail by a single observer, or a segment can be seen for analysis by several different observers. The multiple visualization of the same event is simply impossible in the normal field work without a recording device to make a video or film, and multiple segments of similar events can be compared directly and can be contrasted without relying only on narrative descriptions. According to Erickson (1992), the most important analytical tools are the eyes and the brain that observe the screen.

Collier and Collier (1986) assign that the analysis of the video record is much more difficult than the video recording itself. This is because analysis implies a great amount of abstraction and at the same time the gain of new knowledge. Simultaneously, they also point out the inexistence of analytical tools for pictorial data. However, they maintain that many of the standard analytic procedures used in the qualitative research with verbal protocols, can be adapted for use with video record data.

The analysis of data soon came across difficulties after the beginning, due to all the studies published in this area that we have knowledge of; they only make reference to text analysis, called verbal protocols. This way, there was need to find an innovative technique in order to suppress this difficulty. In this sense, we opted for the techniques of process-tracing applied in the experimental studies of decision making used by the paradigm of information-processing (Payne, Bettman and Johnson, 1993; Newell and Simon, 1972; Beach and Mitchell, 1978). The information-processing paradigm emphasizes how the decisions are taken, and not only what decisions are taken. As a result, the research in this knowledge field frequently complements the analysis of the choice or judgment with the results of the process-tracing, using techniques like the verbal protocols during the execution of the task, the monitoring of the information searching and the time of the answers (Svenson, 1996). The use of this method is consistent with the idea that the understanding of the decision process has to be analyzed through the point of view of a microscope and not under indirect interpretations of great aggregate data (Simon, 1982).

The following table illustrates the result of the codification of a video record, obtained with the resource to the described technique.

Task	Action	Description	Value
3	1	Search MSN Engine	Lan chile
3	2	Evaluation of the Results	
3	3	Commercial Links First Choice	www.expedia.fr
3	4	Filling From	Biarritz
3	5	Filling To	Rabat
3	6	Filling Date Depart	1 April
3	7	Filling Date Arrive	17 April
3	8	Failure	
3	9	Search MSN Engine	Voyage pas cher
3	10	Evaluation of the Results	
3	11	Tail Choice	www.degriftour.com
3	12	Filling Country	Turkish
3	13	Filling Price	Less than 750
3	14	Search MSN Engine	Voyage pas cher
3	15	Evaluation of the Results	
3	16	Failure	
3	17	Backward Page	
3	18	Filling Price	More than 750
3	19	Failure	
3	20	Backward Page	
3	21	Evaluation of the Results	
3	22	Choice	Bodrum

Table 1. Codification of a video record using process-tracing

On this occasion 57 (fifty seven) observations were coded all referring to task 2, 3 and 4, proceeding from 19 (nineteen) subjects. The total was 838 (eight hundred and thirty eight) micro actions. One is about a laborious work to come and go back between the codification and the video visualization. Similarly, the amount of time used by the subject to complete the task is accounted, as well as the total number of actions used per task. Also, the registration of the methods that the subjects had applied with the purpose of completing the task successfully was taken. However, this measure will not be developed in the scope of this paper.

4. The process of data analysis and interpretation

In this phase, the need for a continuous and indispensable practice exists to come and go between the observations and the interpretation. This practice coexists with the need of understanding all the details and the entire problem. The objective of this hermeneutic circle is to produce an understanding without contradiction (Arnold and Fischer, 1994). Thompson

(1997) considers two stages, the first one of which consists of the researcher carrying out a reading of the data set to obtain a global sense.

In this study, the actions set (838 actions) produced a total of 26 types of actions, producing a ratio (occurrences/actions) to the value of 32.23 that it will be able to indicate one high variety. This means that, the variety of the type of actions used by the subjects is significant. The following table presents the types of actions and number of occurrences, for all the types with a value superior than two units.

Actions	Occurrences
Evaluation of the Results	209
Filling	108
Tab	83
Failure	70
Choice	51
Backward Page	49
Tail Choice	44
First Choice	43
Search Google Engine	39
Direct Address	38
Internal Search	28
Second Choice	20
Third Choice	11
Favorites	9
Search MSN Engine	7
Commercial Links First Choice	6
Filter	6
New Session	6

Table 2. Actions and number of occurrences by action

As it can be verified, the number of occurrences "Evaluation of the Results" embraces 25% of the actions undertaken in the decision behavior during the process of information search, almost duplicating the type of action represented in second place. It is evident that as a result of the evaluation a consequence is associated a decision, which means that in the process of decision of the choice of a product or brand, the phase of search of information on the Web is constituted essentially by a set of micro-decisions. The action "Filling" that characterizes a fulfilling of an option or search field, which is to say, an action of knowledge supply by the subject, and the option "Tab" that characterizes a choice of a way properly marked, which is

to say, a well identified choice that the subject decides to follow, being consequently, also a personal micro-decision.

The process of information research on the Web can be described in accordance with a Darwinian model.

The action "Failure" that characterizes a failure during the search, and the action "Backward Page" that characterizes a step backwards just after the subject has executed a choice, together make a total of 14.2% of the actions undertaken by the subjects, and reveal that the decision behavior in the information search is basically a behavior of "trial and error" (Langley et al., 1987).

The actions "Search Google Engine" and "Search MSN Engine" that characterize a search on a Web search engine, together make up 5.49% of the total actions, reaching exactly the same percentage that the set of actions "Direct Address" and "Favourites", representing respectively, a writing of the site's address known by the subject, and the recovery of the address of a site registered in the Favourites. These values mean that for the subjects the resource to the memory was responsible for half of the searches executed on the Web.

When placed before the evaluation of the results supplied by a search engine, only an insignificant percentage of the subjects (5,08%) make use of the commercial suggestions ("Commercial Links Choice") that appear detached on the beginning of the search engine's page. In the same way, the subject's choice on the results of a search engine is most of the time ("Tail Choice"), that is, out of the three first suggestions. This fact could be a clear indication that effectively the subjects evaluate the available alternatives until reaching a value that satisfies them. On this occasion, we are confronted with the adoption of a Simon (1955) satisficing strategy.

The durability of the information search process when the task needs to be solved seems to be more associated to the degree of interest or challenge of the task than to the personal variability.

The following illustration represents the number of elementary actions that the subjects had undertaken in the resolution of task 2, 3 and 4 in their work environments.
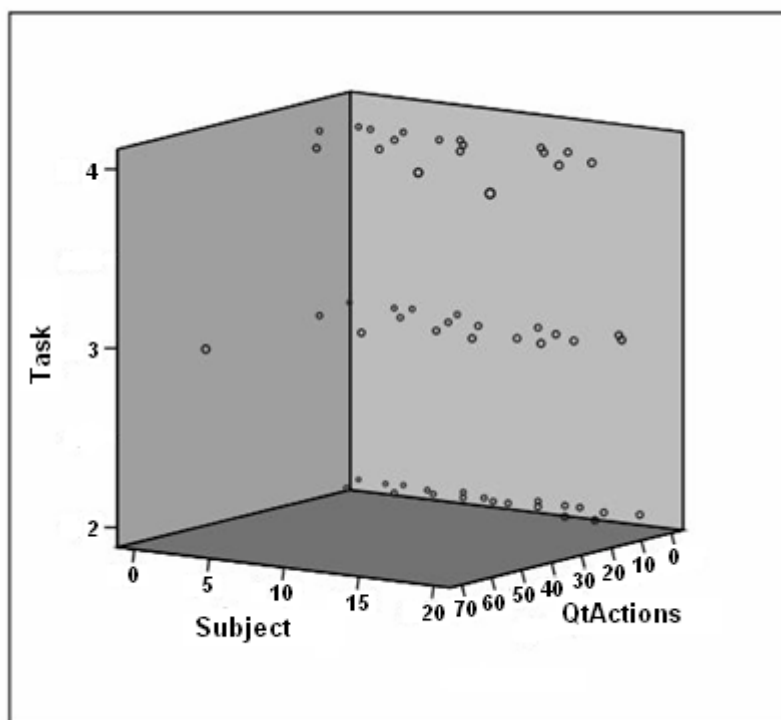
Figure 1 - Number of actions undertaken in the resolution of task 2, 3 and 4.

As we can see from the observation of the graph illustrated in figure 1, obtained from the quantity of elementary actions executed by the subjects during the resolution process of the tasks, clearly it exists an increase in the number of actions executed by the subjects, from task 2 to task 3. This increase is transversal to all the subjects. In the opposite direction, it verifies the relation of task 3 to task 4. Here, the number of actions decreases, although in a less significant way than the previous increase, but that decrease is also transversal to all the subjects.

The result seems to show that the durability of the information search process when the task needs to be solved seems to be more associated to the degree of interest or challenge of the task than to the personal variability on the part of the subjects. This result can suggest that the experience created of a challenging purchase in an online environment for the consumers will bring innumerable positive consequences for whoever develops commerce through the Web (Novak, Hoffman and Yung, 2000).

5. The grammar construction

In this set of elementary actions undertaken by the subjects, which is illustrated in table 1, we tried to identify common patterns that can exist among all the subjects, in the form of the individuals' search information on the Web. Thus, as it illustrates in table 3, during the first phase we opted for the simple transformation of the codification of elementary actions in more intuitive simplified codes, allowing for a better understanding and improved user friendliness more in agreement with the dimension of the collected data.

"Direct Address " => "url",
"Forward" => "->",
"Change to First Session" => "S1",
"Choice" => "C!",
"Second Choice " => "C2",
"Commercial Link Second Choice" => "CP2",
"Commercial Link First Choice" => "CP1",
"Commercial Link Tail Choice " => "CPT",
"Choice First " => "C1",
"Choice Tail " => "CT",
"Failure" => ".",
"Evaluation of the results" => "e",
"Favorites" => "Fav",
"Filter" => "Fil",
"New session" => "New",
"Tab" => "O",
"Interne Search " => "Ri",
"Search Google Engine " => "RGoo",
"Backward" => "<--",
"Filling To" => "r",
"Filling Destination To" => "r",
"Filling Adult" => "r",
"Filling Arrive From" => "r",

Table 3. Example of codifications of elementary actions in simplified symbols

Two options were put forward at that moment: the first one was the inductive extraction of the grammar rules from the set of finite sentences that are available; the second option is basically deductive as it consists of written rules that are apparently found in the data. These grammatical formalisms of characteristic extraction have come to be used successfully in the area of biology, specifically in all research in the subject of DNA study (Paun, Rozenberg and Salomaa, 1998; Searls, 1995).

Our option of extracting the results is perfectly deductive due to the strong necessity of contextualization. Figure 2 illustrates some of the rules of the grammar.

```
RULES/m gi
##((RGoo|RMsn) e C\w+)==>{$1}
(url O Ri)==>ini($1)
(url Ri)==>ini($1)
((url|RGoo|RMsn|Fav)( O)?)==>ini($1)
((r )+)==>R

(\be (C(\S*|O)))==>d($1)
(\bO)==>d($1)
#\.==>.\n

ENDRULES
```

Figure 2. Rules obtained for the grammar that define the obtained patterns

This study meets with this crucial phase of transformation of the recorded video under description rules, in a way of guaranteeing a more formal interpretation and consequently one with high validity. Table 4 illustrates some of the patterns obtained for the elementary actions of task 3.

3 ini C! <-- C! <-- C!
3 ini d C! <-- C1 d R . ini C1 e d C2
3 ini d <-- CT R e . ini e . ini e . ini d d <-- C2 d d
3 ini d d
3 ini d d d d e . <-- CT e d d d
3 ini d d d . ini d d d R d d d
3 ini d d e R C1
3 ini d e <-- CPT e <-- ini d e d . ini d . <-- d R . <-- <-- C! . <-- ini d d
3 ini d e Fil d d d <-- R d
3 ini d e R d d
3 ini d R e <-- R d
3 ini d R . ini d R ini e . <-- R . <-- d
3 ini e ini d <-- CT R . R . R d
3 ini e ini d d <-- d R d
3 ini . ini e d C3 e d C1
3 ini R d
3 ini R d
3 ini R . R . d R d ini R d <-- R d New ini C! d R . d R e <-- <-- d R e ini R New ini d <-- CT <-- CT <-- S1 C!
3 ini R . R . R . R . R C!

Table 4. Example of patterns obtained for task 3

6. Conclusions

The state of this study at the moment basically provides three primary considerations:

    - first, the use of qualitative research with the resource to record videos can motivate a source of useful research work in the area of management, or, more specifically, in the area of marketing. Knowing that the video record becomes more part of qualitative research in anthropology, sociology, psychology and other sciences, it seems to us therefore that the risk of this study will be able to contribute to the acceleration of this reality in this area of scientific knowledge. It is clear that an immensity of additions exist, from the methodological point of view, in the analysis and data treatment obtained from this way;

    - secondly, the applied ethnographic approach on the Web of the natural environment of each computer, can also constitute a source of relevant management studies, and especially, in this study, on the activity of commerce in this new channel that is the Internet;

    - thirdly, the problematic studied reveals that in the decision process of choice of a product or brand, the phase of searching information on the Web can be described in agreement with a Darwinian model, being constituted essentially by a set of micro-decisions. On the other hand, the durability of the information search process when the task needs to be solved seems to be more associated to the degree of interest or challenge of the task, than to the personal variability. Also, no less significantly, it is observed that the use of the memory is responsible for half of the searches executed on the Web on the part of the subjects, and the actions undertaken by the subjects reveal that the behavior of decision in the information search is basically a behavior of "trial and error". It is also observed that the subjects, when placed before the evaluation of the results supplied by a search engine, only in an insignificant way make a demand to the commercial suggestions that appear highlighted at the beginning of the search engine's page. Finally, the process decision of choice by the subjects before the results of a search in a search engine seems to indicate that the subjects evaluate the available alternatives until reaching a value that satisfies them, which is to say, they basically adopt satisficing strategies (Simon, 1955). Consequently, its behavior is based according to the theory of bounded rationality.

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