INFORMATION MANAGEMENT

Selected papers from Coletânea Luso-brasileira

COLETÂNEA
LUSO-BRASILEIRA

VI

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Francisco Alberto Severo de Almeida
Armando Malheiro da Silva
Carla Conti de Freitas

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Sumary

Introduction

Carla Conti de Freitas

This book became the hardest and the most brilliant challenge for me in the last year. The Coletânea Luso-Brasileira is the result of the collaboration among University State of Goiás/Brasil, Beira Interior University /Portugal and Porto University/Portugal. This group of researchers and their partnership with others institutions is an effective example of how working together throughout cultural diversity may enrich us as researchers and also our background.

This sixth volume brings out selected paper of Coletânea Luso-Brasileira from its previous five. The idea of presenting an English version of some chapters helps us in our journey of improving knowledge dissemination and cooperation among institutions. The selected papers that complete this edition highlight the Coletânea Luso Brasileira contribution and trajectory in the last six years towards its main point of study which is the Information Management considered in an interdisciplinary point of view once it is related to other areas such as Education, Communication, Logistics, Innovation and Sustainability. As a result, these selected papers may contribute to the knowledge creation, as they motivate new studies.

To the friends we got along this way while working on the Coletânea Luso-Brasileira, I would really like to thank for the commitment and we hope our partnership lasts while it makes sense to all of us.

Information management as cross-sectional and interdisciplinary area

Different perspectives and strategic importance of "informational typology"

Armando Malheiro da Silva

The practical epistemology as designated by Jayme Paviani to signify articulation of epistemological and methodological problems within a common horizon and, thus, its function would be "to make explicit the assumptions and the purpose of science in union with research rules, procedures and instruments. Therefore, its contribution, besides being reflective, is programmatic"(Paviani 2009: 21), and has underlied the effort of the University of Porto, Portugal, the precise delimitation and synthetic (uniting theoretical concerns of the scale research practice) field of Information Science (IS). So the definition in use: "Social science which investigates the problems, issues and cases related to the info-communicational phenomenon, perceptible and knowable through confirmation or denial of inherent properties to the genesis of the flow, informational organization and behavior"(Silva, 2006, p. 141). It is also the science that, keeping alive the documentary and practical tradition which it inherits from previous subjects as librarianship, documentation and archiving, studies the informational cycle in its fullness and transversality: origin, collection, organization, storage, retrieval, interpretation, transmission, processing and use of information.

And how is information defined? It has been defined in various ways and views. In the midst of such a variety of settings, we chose to adopt a definition which

explores the attached object operatively: "Structured set of mental and emotional representations which are coded (signs and symbols) and modeled with/for social interaction, which may be registered in any material support and, therefore, communicated in an asynchronous and multidirectional way "(Silva, 2006: 150).

In order to be communicated, the information takes the form of the document, but it is not identical with it, though our senses (visual and tactile) allow us to see the document as an inseparable artifact (and symbiotic) of the mentifact (information). Perceiving the subtle but crucial difference between the content and the container, between the support and the "substance of meaning"registered on it, creates epistemic legitimacy to the IS.

Since the 1860´s (GIT, 1961-62; Harold Borko, 1968) and, later, in the 1890´s (Yves Le Coadic, 1994), the definition of IS has included, punctually, the reference to the properties. In the exposed definition, in use of the University of Porto, they appear and, especially, they were listed in a book which was prepared to serve as a Theoretical and fundamental background to the Degree in Information Science which began to be taught in the 2001-2002 academic year (SILVA; RIBEIRO, 2002). They are six: structuring by the action; dynamic integration; prägnanz (pregnancy); quantification; reproduction and transferability. And the properties are somehow intrinsic and "universal"characteristics of the info-communicational phenomenon. And it is in this relation to this human and social phenomenon that the object of IS (defined above) is (re)constructed.

The "steps" of the info-communication cycle/process (object of study or construct), listed above, form the object of IS and can be divided into three large specialized "study" groups or areas: the production of informational flow, the organization and representation of information, and the informational behavior (Silva, 2006). This tripartite division of the object of IS began with an ambiguity that was being addressed and resolved first, and clung to the inclusion of information management. The connection of this topic, call it for now, so the trans-and interdisciplinary IS, developed in Porto, never offered questions, especially as to be deep and even radically rethought and reworked the formative model, molded in specialization courses in Information Science, who remained from 1982 to 2001 and lasted, with some technicalities reinvigoration, the vocation of the classic course Librarian – Archivist, taught at the University of Coimbra (1935-1981), to enable librarians and archivists for their respective public cultural institutions, aimed at creating a new hybrid professional, working symbiosis of social scientific

technological matrix, if inflection – clearly, in affirming the manager of information as a professional future that is increasingly present. The doubts and difficulties were not, therefore, in the professional dimension, but in the epistemological framework. And here, the initial response was in order to dilute the information management in the area of information production: this guidance was to "present an image based on epistemological assumptions and conducive to putting the information management alternative or explicit knowledge, such as segment the object of IS, which we conceive of such an epistemological point of view and training in Port. And this perspective arises reflected, in condensed form, entries in Information Management and Knowledge Management DeltCI" (Silva 2009: 233), imposing itself, however, the caveat that on Knowledge Management our position remains unchanged.

In later articles (SILVA, 2005: 89-113 and Silva, 2009: 233-252), the approach has become less simplistic and was refused the idea of identifying, without more, the Information Management as one of the three areas of IS object, associated with the production of informational flow, clearly replaced by a "interdisciplinary topic of Information Management in the optical of Information Science"(Silva 2009: 246), which can be explained in more detail in this way:

> And put the inter-disciplinary relations, with the maturity and the complexity that I can see them today, there seems to be no doubt that the Information Management (IM), as well as the Knowledge Management and ways to more strategic and sectoral employment as Competitive Intelligence (IS) and Economic Intelligence (IE) (Paim, 2003; Tarapanoff 2006, and SANTOS; MILK; FERRARESI, 2007), does not constitute a scientific discipline itself, but a "platform"which is essentially practical of application of ideas, theories, models and several solutions, condensed into multiple different consulting "packages". This means, in plainer terms, that the IM constitutes a topical in removal route of traditional and instrumental vision of Information Technology and Communication (ICT). Indeed, much of the teaching of information management, does not exist or has had a very strong emphasis on coded and stored information in information technology (Rascão, 2008: 14-15). It is urgent, therefore, according to this author, to whom the IM has become, for better or for worse, an academic discipline (this does not mean that it is, naturally, a scientific discipline), to let this traditional view to, alternatively, be constructed a synthesis filled with contributions from Economy, Management, Strategic and Communication Management, which

> indicate other ways of looking at information management. These fields have a less technological vision of information management and make the separation between the encoded, stored and accessed information by means of information and communication technologies, and general information, ie, in broad and comprehensive terms in the process of decision making (Rascão, 2008: 15).
>
> Being the IM (and related variants) a topical which moves towards the dynamic synthesis, it seems to be rooted more clearly in inter-science SI and interdisciplinary field of [Communication Sciences], calling a stronger approach of Applied Social Sciences, epistemic space where IS has to complain with growing strength its belonging and own space (Silva 2009: 235-236).

Clarifying further, to shoot this initial item, it can be said that IM entirely corresponds to the nature of applied social science with the trans– and interdisciplinary IS is defined and presented, ie, it consists, thus, in the applicational dimension of the IS, crossing all areas of the field of study of this science and it is also composed of other different scientific-technical approaches, but complementary and enriching.

As it is evident for us that an information manager must have a background in IS, because this is the training model followed at the University of Porto, his or her professional development and expertise in science and technology plan require aggregating skills through deepening of other disciplines and knowledge such as Sociology of Organizations, Economy and Management, Strategic Management, Business Development, Information Systems and IT Management, for all of them, and others, find themselves intertwined in the complex and dynamic activity of IM.

The basis for a debate on different perspectives

Previously clarified how the IM is configured epistemologically in the IS matrix, in evolution, we are now in a position to examine in some detail, not only the need of the pair "information management – knowledge management", but also how it has been handled in the available literature, consisting of texts by authors from IS and the vast and diverse Management area.

Rehearsing a rating, which is always risky, because it can be either too general, leaving "specimens" from the outside, as too particularistic to lose flexibility and

breadth, we will say that lie three perspectives that influence, albeit in different ways, how we can address this issue:

1) "Management of organizational knowledge/consultancy", strongly influenced by literature in management consulting, which, in turn, owes the distinction between tacit and explicit knowledge, initiated by Michael Polanyi (1891-1976), scientist and philosopher of science of Hungarian and Jewish origin (brother of Karl Polanyi, an important mentor of Economic Sociology) and appropriate, among others, by Nonaka Ikujiro and Hirotaka Takeuchi (Nonaka and Takeuchi, 1997);

2) "Phenomenological and informational", by Tom Wilson;

3) "Cognitivist, Info-comunicational and systemic"(Silva and Ribeiro).

The first perspective accepts the conceptual difference between data, information and knowledge, dividing this still in tacit and explicit, and it has as inspiring source commonly recognized, the work of Michael Polanyi, in terms of the definition of tacit knowledge and its distinction regarding the explicit. With the backing of Polanyi, tacit knowledge is understood as "that which the individual acquired throughout life by experience. It is usually difficult to be formalized or explained to other person, because it is subjective and inherent to abilities of a person. The word "tacit" comes from Latin *tacitus* which means "be silent, silent", applying to something that can not or does not need to be spoken or expressed in words. It is implied or implicit"(Wikipedia). And the same source acknowledges that Polanyi is one of the theoretical references for the notion of tacit knowledge, in that it "helped deepen the contribution of tacit knowledge to the genesis of a new social and scientific understanding of the research. This author also studied its relevance to educators"(Wikipedia). In the book he published in 1966, titled *The Tacit Dimension*, Polanyi left expressed as follows:

> [tacit knowledge is] spontaneous, intuitive, experimental, everyday knowledge, the type disclosed by the child who makes a good game of basketball, (...) or play complicated rhythms on the drum, despite not knowing how to do basic arithmetic. As a person who knows how to make bucks, but do not know how to add numbers. If the teacher wants to become familiar with this kind of knowledge, he or she has to watch it, to be curious, to hear it, amaze himself or herself, and act as a kind of detective who seeks to uncover the reasons why the children to say certain things. This kind of teacher strives to meet the students and understand their own process knowledge, helping them to articulate their knowledge-in-action with the school

> knowledge. This type of education is a form of reflection-in-action that requires the teacher the capacity of individualize, ie, to watch one student, even in a class of thirty, having a sense of his or her level of understanding and difficulties (Polanyi, 1966:82, quoted by Wikipedia).

This notion became quickly applied to education as valuable aid for teachers, calling their attention to a type of "knowledge" which is subjective, not measurable, nor written, almost impossible to be formally taught, valuable because difficult to capture, to register and to disclose, once "it linked to the individual." And more one reads the entry we are following from Wikipedia, translating, moreover, the view which became widespread in the literature and in the *milieu* of professional and consulting management:

> We can say that we all possess this knowledge, but it is hard to explain it and this is due to our experience of life, the knowledge we have acquired over the years, that is, knowledge that is within us. Possibly the best way to convey it is through oral communication, in direct contact with people, coexistence and interactions with the groups that we participated.
> Tacit knowledge is opposed to knowledge which is explicit, systematized, which can be formalized in texts, drawings, diagrams, etc.. or stored in databases or publications. The word explicit comes from the Latin *explicitus*, past participle of *explicáre* and it means "explained, declared". Tacit and explicit knowledge interact and complement each other (Wikipedia).

A more developed and accurate analysis of the theory proposed by Polanyi appears in the study of Rosa Maria Quadros Nehmy and Isis Paim. The authors explain in details the aspects of the theory, enfasizing the central point that "Polanyi was concerned to develop a theory that denounced the contempt or attempting to ignore the personal component in the production of scientific knowledge typical of modern science"(NEHMY; Paim 2003: 285) and that the appropriation of the concept of tacit knowledge for knowledge management has distorted the original and integral meaning present in Polanyi's argument:

> The explanation of 'tacit knowledge' does not appear as goal or objective to be achieved. In contrast, the tacit component is in its nature an inaccessible process.

> Even though elements of tacit component can be expressed in descriptive language, the set, the form of such knowledge, remains impervious to language. (...)
> There is not a reference to an explicit knowledge as considered by knowledge management. Tacit and explicit knowledge are not even complementary in the sense that there is not a continuous line (or a scale) so that there is more or less tacit or implicit knowledge. (...)
> For the author, the science is the result of personal emotions and passions of scientists underlying faith in scientific formulations. Passion for the beauty of science is the engine for the production of knowledge. So it rebels against attempts to imprison it utilitarian interests. Fears that science has to submit to the utilitarian demands and lose the values that assign it the freedom to exist by itself, by its aesthetic values.
> This position of Michael Polanyi collides head-on with the propositions of knowledge management. (...) In deviation from the theoretical significance of the term in Polanyi, the notion of tacit knowledge becomes itself tacit. The type of argument used for the definition of tacit knowledge in knowledge management is the opposition between, at one extreme pole, tacit knowledge, and at the other, the explicit knowledge. In this movement, we consider each of the terms of the definition as two types of absolute knowledge that are defined by the opposition: tacit is what is not explicit and the inverse (NEHMY; Paim, 2003: 287-288).

In addition to what was "indoctrinated" by Polanyi, literature adds, generally, the Japanese Nonaka and Takeuchi, associated with a concession that was easily assimilated by managers and management trainers: organizations receive knowledge and information from the environment, adapt and create, from the inside out, new knowledge and information, recreating the respective environment. These authors believe that

> Through the capture of information and knowledge from the external environment process, organizations seek to identify any leads or new idea that would boost their business. This process occurs through organizational interaction with various stakeholders (government, competitors, suppliers, customers, distributors). After collecting information and external knowledge, both are absorbed, incorporated and appropriate to the organizational environment. (SCHONS; COSTA, 2008)

Still following the scoresheet made by Cláudio Henrique Schons and Marilia Costa Damiani, Nonaka and Takeuchi comment that the skills and lessons learned drawn from the external environment, are modified, enriched and translated in order to fit the identity and self-image of the organization:

> In other words, the information collected externally is adapted so as to guide the organization strategically, directing it into effective actions.
> In the domestic environment, the creation of new knowledge occurs from an intensive and laborious interactive process among members of the organization through formal and informal communication, represented, for example, through meetings, discussions, seminars, among others. Therefore, the flow of information and knowledge involving internal and external environment enables new knowledge to be created, and consequently the organization to innovate and become differentiated in the market.
> In this sense, the innovation process is moved through the conversion that occurs from outside to inside the organization and out again through new products, services or systems.
> According to Nonaka and Takeuchi (1997) is internal and external interactivity that allows the creation of new knowledge, supporting continuous innovation in the organization and consequently its competitive advantage (Figure 1).

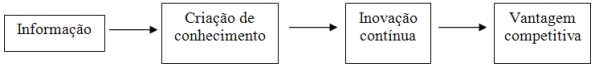

Figure 1: Knowledge as a competitive advantage (SCHONS; COSTA, 2008).
Information knowledge creation continuous innovation competitive advantage
Source: Adapted from Nonaka and Takeuchi (1997, p 5.) Apud Schons and Costa 2008

That is, therefore, the foundation basis of what substantiates the perspective called "Conventional and Consulting Management", which was assimilated without hesitation or the minimum critical requirement for information technology management, which can also mix this contribution with the mechanistic approach of information, due to the mathematical theory of communication by Shannon and Weaver (1949). So it was and remains enshrined the famous triad: data, information and knowledge.

Pedro Luiz Cortes condenses all that has been said and repeated regarding this matter in his manual on *Information Systems Management*. An item entitled "defining data, information, knowledge and wisdom," begins by warning that

> it is possible to check – albeit in an introductory way – that **data** and **information** may not be the same thing (and really they are not), since – according to the definition adopted – the **information** is obtained from **data** processing. Thus, it is possible to assume a hierarchy, with **information** being in a higher level to that occupied by **data**.
> It is likely, at first, this may cause some confusion, since, in general, the terms **data** and **information** are taken as synonyms, without major problems. Even so, it is necessary a distinction between these terms, which will be the key to understanding how knowledge, intelligence and wisdom develop (CÔRTES, 2010, p. 26).

Following the express purpose, Pedro Côrtes presents data as "sequences of fruit facts, which were not organized, processed, related, evaluated or interpreted, representing only isolated parts of events, situations, or occurrences" and thus are "basic units, from which information can be produced or obtained" (Cortês, 2010, p. 26). On the other hand, information occurs

> When data undergo some kind of relationship, evaluation, interpretation or organization, there is the generation of information. From the moment data is transformed into information, decisions can be made.
> It should be emphasized, however, that the quality of these decisions will depend on the quantity and quality of available data and the relationship made. The same set of data, when processed by different systems, may generate **qualitatively** different information (Cortês, 2010: 26).

To these essential notions the author also added the notion of metadata, defined, according to Ikematu, and, among several possible definitions, such as "data associated with objects that helps potential users to take full advantage of the knowledge of their existence or characteristics"(Côrtes, 2010: 31). To generate knowledge, properly structured and related data and information are required. The author, using an analogy, refers that if data is a brick, information is a wall made up of several bricks, and hence "knowledge is one or more rooms constructed from the

organization and proper relationship of various walls "(Côrtes, 2010: 41). And rising the scale comes the concept of intelligence, for which it is first raised the contribution of psychology, but in the end the sense of collective intelligence prevails, designed by Pierre Levy (Levy, 1997):

The importance of the group and as an individual interacts with it, supplying social environment with information and for it being supplied, providing and obtaining opinions, reporting and knowing different experiences, allows to infer – at least initially – the possible existence of a collective intelligence as a substrate capable of promoting the development of individual skills (Côrtes, 2010: 42).

At the apex of the pyramid is the wisdom regarded as the upper stage,

> in which intelligence available about a particular subject is extended, occurring the generation of additional knowledge by selective accumulation of additional information that are crossed, interconnected and complemented by the accumulated experience. Decisions are taken with a reduced possibility of error, because the perception of the whole and the accumulated experience make various alternatives are considered with their possibilities of error and accuracy (Cortés, 2010: 44).

The cited author offers a contribution situated, more clearly, on the side of computer management and, hence, we can reset the agenda that matters most here, marked by the Management and the IS, and, with Marta Lígia Pomim Valentim, worth following differentiation between information and knowledge that will be rebated later both in the perspective of Tom Wilson, as in Armando Malheiro da Silva and Fernanda Ribeiro. According to Marta Lígia Pomim Valentim:

> Information can be considered object, because it is from explicit information on some support, that we envision knowledge built by an individual or group of individuals. A report can only exist from the explicit knowledge of someone or a group. On the other hand, information may also be a phenomenon, i.e., the individual or group that prepared the report needed to perform a variable cognitive process, after making various individual and collective cognitive actions, for instance, relate, isolate, associate, disassociate, analyze and synthesize, getting to the end of the process explicit knowledge, in a report format.
>
> As a phenomenon, information can be emancipatory, since from it, the knowing subject or group of knowing subjects can perform the cognitive process individually

> or collectively, with better security, confidence and peace of mind. Making sure that at the end of the process, explicit knowledge in a report format has reliable and consistent content. Still, as a phenomenon, information can provide conditions of power, subjugation and difference, as the knowing subject or group of knowing subjects who possess relevant information may make more efficient cognitive processes than other individuals or groups of knowing subjects who does not have relevant information to their scope/disposal (VALENTIM, 2008: 20-21).

Interestingly, the positioning of Martha L.P. Valentim, professor at UNESP of Marília, in the area of Information Science, articulates perfectly with the "cognitive" approach, so designated with a clear lightly, by Bertram Brookes, author of a formula that was getting a broad and benevolent host, although still lacking a rigorous critical examination:

$$K(S) + \delta K = K\,(S + \delta S)$$
$$\delta I$$

Translated in natural words, the formula means that a state of knowledge K(S) passes into a new state of knowledge K(S+δS), through an increase in knowledge δK, extracted from an increase of information δI, indicating δS the effect of this modification in the initial state of knowledge. We will see below that the "infocomunicational and systemic" perspective rejects the simplicity and reductionism of this formula, but there is no doubt that it is in line with the "doctrine" accepted in the intricacies of Management consultancy.

This confirms what has just been stated, if we stop at certain readings. Reading the study of Helena Crivellari, we find, for example, this extract:

> In *The economy of knowledge*, Dominique Foray (2000: 10) makes a clear distinction between knowledge and information. For him, knowledge is more than information, to be able to extrapolate given prior knowledge and from it infer new information and new knowledge. Foray shows that knowledge can be encoded, which means lowered – to information – and converted to message to be transmitted from one person to another, or to be stored. The coding of information creates then an ambivalent 'good', having certain properties of information: becomes commoditised,

> manageable, but also becomes a 'public good', which implies the need for protection and subjection to the legislation on intellectual property (CRIVELLARI, 2003: 249).

And if we proceed by other "spaces for reading", we can reap, in one of the famous "gurus"of management, Peter Drucker, the visionary idea, launched in the 60s, that the global economy would be sustained by knowledge, transforming the market organizations in "generating of knowledge bodies". From a text inserted in the book *The Essential of Drucker* is worth highlighting the following:

> By itself, the specialized knowledge does not produce any performance. The surgeon is only effective if there is a diagnosis and it is not even the competence of the surgeon. Those who carry out market studies, alone, only produce data. To convert the data into information, the more make them effective in knowledge action, people associated with marketing, production and assistance are needed. As a solo in his research and writing, a historian can be very effective. But to generate the instruction of students, many other experts have to contribute – people whose expertise can be Literature, Mathematics or other areas of History. This requires that the expert has access to an organization (DRUCKER, 2008: 334).

Anthony de Pádua Araújo and Lindolfo Galvão de Albuquerque relied on Drucker and presented Nonaka and Takeuchi as formulators of the theory of the creation of organizational knowledge, theory which lies in the distinction between tacit and explicit knowledge and the in the assumption that "human knowledge is created and diffused through the "knowledge conversion", which is the social interaction between tacit and explicit knowledge" (ARAÚJO; ALBUQUERQUE, 2010, p. 53-54). And this "knowledge conversion" was designed with four ways: socialization, externalization, combination and internalization. Socialization is a process of sharing experiences and assumes that tacit knowledge becomes a new knowledge, which is also tacit: "A person can acquire tacit knowledge directly to another without making use of language, as in the case of learners who learn from their masters through observation, imitation and practice. The secret to knowledge acquisition is experience" (ARAÚJO; ALBUQUERQUE, 2010: 54). Outsourcing is a process by which tacit knowledge becomes explicit, express "usually in the form of concepts, metaphors, analogies, hypotheses or models" (ARAÚJO; ALBUQUERQUE, 2010 p. 54). The combination consists of explicit knowledge generate another knowledge, also explicit. And

the internalisation "presupposes the incorporation of explicit knowledge to tacit knowledge – the "learning by doing". It occurs through verbalization, systematization and documentation of knowledge in the form of projects, manuals, personal stories, iconographic records, among others" (ARAÚJO; ALBUQUERQUE, 2010: 54).

The model of Nonaka and Takeuchi became almost a dogmatic that the vast supporting literature produced by managers and consultants, reproduces and spreads. So did Luiz Filipe Quel, in a small book published by Saraiva (QUEL, 2006); so did Joseph Poças Rascão in a work of greater scope, broader and interesting theoretical reasoning and intelligently structured, putting the emphasis on information management (RASCÃO, 2008); and it is accepted and explained in the opening chapter of the collective work on business management in the knowledge on (SILVA; NEVES, 2003). Finally, a very brief "stroke" over a dominant trait of the perspective we have been characterized and, to close, passing to the next, starred by Tom Wilson, it must be summoned three consultants from McKinsey & Company, German, who developed, during two years and encompassing forty companies in the United States of America, Europe and Japan, a study, for the Company, which sought to know what extent the management teams of these companies are able to use the knowledge they have on offer, to improve its overall performance. They departed for that, from a "broader perspective" of knowledge management, i.e., while the information is just a number, knowledge is the ability to relate this and other numbers, to understand the meaning of information, relating it to other information, analyze and extract interpretive results of the selective, analytical and critical examination:

> Managing knowledge is to be able to understand these relationships – either to improve products, processes or the relationship with customers – to increase profitability.
> In a more formal definition of knowledge, we would say the following:
> "Knowledge consists in understanding the relations and causalities, so it is key to make the operations effective, develop business processes or predict the outcomes of business models"
> Our brief definition of "management" also helps to clarify the confusion that sometimes exists around this issue:
> "The management is the conscious and systematic decision on how best to use scarce resources in an uncertain environment to achieve lasting improvements in the performance of an organization". (...)

> Most of the work that is done on knowledge management discusses thoroughly the distinction between explicit knowledge (can be structured and documented) and tacit knowledge (related to the senses and experience). This can be a practical way of looking at things, but the situation is, actually, far more complex. The two categories are so strongly intertwined that in practice it is not possible to separate them easily. For example, to fully understand a written document (explicit knowledge) is required, sometimes, extensive experience (tacit knowledge): a sophisticated recipe may have no meaning for a person who has never had to cook; a text on laws can be totally incomprehensible to those who have no training and practice in this area (KLUGE; STEIN; LICHT 2002: 14-15).

Hold back, for now, a very interesting aspect: the German authors, without considering the approach of "organizational knowledge management/consultancy", where we insert them, consider the categorization in tacit and explicit knowledge, simplistic and reductive, emphasizing that they are "highly interconnected". They also emphasize that knowledge presupposes the ability to (re)connect and understand, what makes implicit a strong remitting for the importance in this process of the capabilities/faculties (cognitive and emotional) of the brain and mind. An obvious opening to the third perspective to address this item.

Consider, however, the second, which we term "phenomenological and informationalist", mirroring the educational and professional profile of the librarian and professor emeritus at the University of Sheffield, UK, Tom Wilson, full name Thomas Daniel Wilson (3), editor of the electronic journal *Information Research* (4) and important mentor and cultivator of researches, since the 70s of last century, in information management and information behavior. A perspective drawn, clearly, in an article precisely published in this journal in 2002, with the suggestive title *The nonsense of the 'knowledge management'* (WILSON, 2002) and with the clear purpose to critically examine the origins and basis or grounds of the management knowledge, its components and its development as a field of consultancy practice, exploring issues present in the distinction between information and knowledge as well as the design before exposed and analyzed, by Michael Polanyi, showing how it was being taken the concept of tacit knowledge in journals, in websites of consulting companies and in programs of business schools.

Point of relief, that comes after a very brief introduction, it is precisely the distinction between knowledge and information, a distinction that Wilson considers

very important for information scientists and specialists in information systems. He adds that it is not a very difficult task and, once made, is more immediately visible the "absurdity" of the term "knowledge management".

According to Tom Wilson, "knowledge" is defined as what we know: knowledge involves the mental processes of comprehension, understanding and learning that goes on in the mind and only in the mind, however involve interaction with the world outside the mind, and interaction with others. Whenever we want to express what we know, we can only do so by uttering messages of one form or another – oral, written, graphic, gestural or even through 'body language'. Such messages do not carry 'knowledge', they constitute 'information', which is what the mind can learn to assimilate, understand, comprehend and incorporate into its structures of own knowledge. These structures are not identical neither to the person who sends the message, nor to the receiver, because the knowledge structures of each person are, as Schutz (1967) noted, "biographically determined". Therefore, the knowledge built from the messages, may not be exactly the same as the knowledge base from which the messages were delivered (WILSON, 2002).

It appears that, in common usage, the two terms are often used as synonyms, but the task of the academic researcher should be to clarify the use of terms, so that the field of research has a clearly defined vocabulary. The current confusion about "knowledge management" perfectly illustrates this need. And in this sense, the conclusion to Wilson is simple: everything that comes out of the mind can be in the form of data, when they result of simple facts, and information, when the data are embedded in a relevant context to the recipient, and we still encounter "collections of messages", composed in various ways, and they may be regarded as "information resources" of various kinds (collections of articles in a journal, emails in an electronic "folder", handwritten letters in a file, etc.). Data, information and information resources can, because they are outside the mind of the subject, be managed, but knowledge itself ("what we know") can never be managed, except by the knowing subject, and even then, on an imperfect way, since, in fact, we show very little control over what we know (WILSON, 2002).

Put it this way, Wilson embraces another essential point within the strategy adopted: what is knowledge management? The path to an answer was followed by research in the three citation indexes of *Web of Science*, between 1981 and 2002, with a focus on articles with the term "knowledge management" in the title. And the interesting result: from 1986 to 1996, there were very few occurrences, but between

1997 and 2002, growth was exponential, and seems to have been a slowdown in the latter date. When we look in more detail for the first period (1986-1996), it appears there is a wide range of subjects treated under the said expression or topic: the head, appears with seven articles "the systems of artificial intelligence and expert systems", then come four papers on general aspects of computer science, three over decision support, two regarding information technology systems in general, and finally, several subjects (three papers), information technology in general (two papers) and various subjects (eg, databases, scan, geographic information systems and human-computer interaction – four papers), totaling, all things considered, 61% of the papers:

When we look in more detail at the items in the first eleven years (1986-1996) we find a very wide range of subjects represented under the heading 'knowledge management'. Two items were simply editorials in journals – when these are removed we are left with thirty-three papers, the largest single category of which deal with artificial intelligence and expert systems (seven papers), followed by general aspects of computing (four papers), decision support systems (three papers) information technology in general (two papers) and miscellaneous subjects (i.e., databases, digitisation, geographical information systems, and human-computer interaction – four papers) Taking these together as dealing with computing and its applications, we have 61% of the papers. (original de Wilson)

> Apart from these computing topics we have education, the human genome project, information policy, information management, organizational structure, product development, terminology, and a variety of other subjects. Clearly, however, before the surge in publication in 1997, 'knowledge management' meant some application or other of computers, with the influence stemming from the notion of 'knowledge bases' in the expert systems field. The analysis also suggests that, from the beginning, there has been confusion over what the term meant, since few of these papers bother to define the term.
>
> This focus on technology appears to persist: I downloaded 158 references from the *Web of Science* for 1999 to 2001 into *EndNote* and then searched the abstracts for specific terms: without taking account of double counting, 'information technology', 'technology' and 'software' occurred a total of 66 times, while 'information sharing', 'communities of practice' and 'knowledge sharing' occurred a total of only 10 times. To determine the current nature of 'knowledge management' in more detail, I searched the *Web of Science* again (all three citation indexes) for papers published in

2001 with the phrase 'knowledge management' in the record. Excluding abstracts of papers, this produced 242 items, distributed over 106 journals. On a relatively crude classification, the 106 journals were distributed across 26 subject fields, with six fields having more than three journal titles. This suggests that the concept (although interpreted in different ways in different fields) is widely distributed across fields of practice (WILSON, 2002).

It is important to systematize, in a table, the research done by Tom Wilson:

SUBJECT AREA	Nº
Computing & Information systems	26
Information Science, Information Management & Librarianship	18
Management	13
Artificial Intelligence	10
Engineering	8
Medicine	4
JOURNAL TITLE	Nº
Decision Support Systems	12
Journal of Information management Systems	10
Wirtschaftsinformatik	10
European Journal of Information Systems	9
Expert Systems with Applications	9
Nfd Information Wissenschaft Und Praxis	8
IBM Systems Journal	7
Journal of Strategic Information Systems	7
Journal of Management Studies	6
Journal of the American Medical Informatics Association	5

Source: Wilson, 2002.

Analyzing the articles published in selected journals, we see that Wilson's objective was to detect the common among them about knowledge management. And the author, whose research we expose and summarize, does it is within each publication, of the ten chosen, finding something meaningful:

> A number of points arise out of this analysis: first, it is curious that the vast majority of papers are in special issues of journals and that, in some cases, no other paper has been published on this topic in the same journal since 2001. This suggests that the topic has not entered the normal stream of papers in these journals using the same terminology – although papers on the same subjects – expert systems, decision making, decision support systems, etc., – have continued to be published. The second point reflects the first: there is absolutely no agreement on what constitutes 'knowledge management' and, in the case of the special issues there is a suspicion that the papers have adopted this terminology simply to be published in that issue. Thirdly, those papers that seriously address the question of whether knowledge can be managed generally conclude that it cannot and that the topic breaks down into the management of information and the management of work practices (WILSON, 2002).

Applying, then, the same exercise to several consulting firms, given that knowledge management was, in its origin, a movement driven by management consultancies, and beginning with one of the "founding fathers"of the idea – perhaps founding father – Karl Erik Sveiby, who wrote the first book on the subject in 1990, under the Swedish title 'Kunskapledning' (Sveiby, 1990), extended it to *Accenture* Consultant, *Cap Gemini Ernst and Young*, *Deloitte and Touch*, *Ernst & Young*, *KPMG Consulting*, *McKinsey & Company* and *PricewaterhouseCoopers*, concluding:

> The conclusion to this brief exploration of consultancy Web sites is that 'knowledge management' means different things to different companies and that one or two of them that have previously dabbled with the idea have moved on to other things.
> Some of the consultancies covered claim that companies are flocking to them to discover the joys of 'knowledge management'. However, since 1993, Bain and Company have been tracking the use of various management tools and according to their latest survey covering the year 2000 (Bain & Company, 2001) only about 35% of their world-wide sample of 451 companies was using 'knowledge management',

> reporting a satisfaction rating of about 3.5 on a five-point scale. The usage figure puts 'knowledge management' in 19th position, out of 25 management tools. This compares with about 70% using benchmarking, and almost 80% using strategic planning. The Bain survey suggests that the flood may be more of a trickle (WILSON, 2002).

In addition to the journals and consulting firms, projected on their websites, Wilson "peeked" even business schools, more precisely their courses in knowledge management, having not been difficult to find patents difficulties of definition and distinction about this operational concept. In Stuart Graduate School of Business of the Illinois Institute of Technology, knowledge management is equivalent to or synonymous with specialized systems, on support to decisions and related software technologies. At George Mason University School of Management, knowledge management integrates information management systems and systems that manage the flow of information. At the University of Kentucky 's Gattan College of Business and Economics, the concept in focus is set as the invention, improvement, integration, use, administration, evaluation and impact of a variety of computer-based techniques, to manage knowledge (ie, represent it and process it) and that have been and will be designed to complement innate management skills of human knowledge. At the McCombs School of Business at the University of Texas at Austin, there is a mix of subjects including business intelligence, knowledge management, and worker's knowledge and productivity, data modeling and group decision support systems. In one of the most prestigious American university, Georgetown University, Washington DC, through its MBA program in Technology and Knowledge Management, emphasizes an orientation towards information systems. And at Harvard Business School, knowledge management is subsumed by "learning organization", as the processes that promote it determine how individuals and organizations create, acquire, interpret, transfer and retain "knowledge". A great rule in the "Learning Process and Knowledge Management" module, with emphasis on experimentation and benchmarking, is to learn from the successes and failures of the past. In London School of Economics, knowledge management is not offered nor at MBA level, or Doctoral level, succeeding the same in the Manchester Business School. Situation that, in essence, was found in the Said Business School in Oxford, Cass Business School, City University, in London and Warwick University Business School. Adding and subtracting the result emphasized by Wilson, the overall impression is that there is a

clear discomfort with the concept, because he has diffused presence in institutional websites as well as the teachers' programs (Wilson, 2002), repeating thus the patented by examining journals.

What emerges from analyzed sources, in many cases, is that knowledge management was being used simply as a synonym for "information management". Strong idea that Tom Wilson further strengthens calling the valuable testimony of David Weinberger: this author cited a conversation of Andy Levin, editor of Knowledge Management, occurred in an event, with a group of people. Then he asked them if, when they used the term knowledge management, they were not simply replacing the concept of marketing. The question rattled the group and the answers were distributed into three groups or types: "1. No, we've added important new features designed to help you with your KM chores; 2. Sort of. We have the same features as always but have discovered new applications for them; 3. Yes, you pathetic loser"(Weinberger cit. WILSON, 2002).

Tom Wilson sought to show that the effect fashion weighed heavily on information exchange for knowledge, because of their (the mentors and actors of this amendment) understanding that, thus, the already existent solutions were "best sold". He continued this same demonstration with other examples: the excellent search business websites, www.brint.com, had a large section devoted to information management, but, in 1999, this "link" crashed; and on the World Bank website has been disclosed a document of Stephen Denning, which stated:

> Thus organizations with operations and employees around the world are now able to mobilize their expertise from whatever origin to apply rapidly to new situations. As a result, clients are coming to expect from global organizations, not merely the know-how of the particular team that has been assigned to the task, but the very best that the organization as a whole has to offer. Information sharing is thus enabling – and forcing – institutions that are international in the scope of their operations, to become truly global in character by enabling information transfer to occur across large distances within a very short time (Denning, 1998 cit. WILSON, 2002).

Wilson caught this text, changed the word knowledge by information and concluded that "made no difference at all to the sense of the piece" (WILSON, 2002). It was thus laid bare only a cosmetic operation, rather followed: the report of KPMG Consulting (2000) on "knowledge management" showed the same strategy

of renaming (Wilson, 2002). Replacing words for a "marketing issue", "fad" that neither international organizations such as the European Union have escaped!... (WILSON, 2002).

Dismantled the "fad", Wilson attacked the alleged theoretical basis: the operational notion of "tacit knowledge" and their capture process, which are at the heart of knowledge management. Going to the essential, Wilson had to revisit Polanyi, after appropriating by Nonaka and Takeuchi, what has been done behind the literature review and affects "organizational knowledge management" perspective, through the critical contribution of Rosa Nehmy and Isis Paim. Wilson converged, interestingly, with the reading of these authors, but could go further distinguishing between tacit and implicit, showing that this can be encoded (transformed in words, numbers, drawings, etc.) and that can not:

> Implicit knowledge is that which we take for granted in our actions, and which may be shared by others through common experience or culture. For example, in establishing a production facility in a foreign country, a company knows it needs to acquire local knowledge of 'how things are done here'. Such knowledge may not be written down, but is known by people living and working in the culture and is capable of being written down, or otherwise conveyed to those who need to know. The knowledge is implicit in the way people behave towards one another, and towards authority, in that foreign culture, and the appropriate norms of behaviour can be taught to the newcomers. Implicit knowledge, in other words, is expressible: tacit knowledge is not, and Nonaka would have saved a great deal of confusion had he chosen the more appropriate term. The critical reader might ask him/herself: 'Does it make any difference to the argument if, in the diagram, we replace "tacit knowledge" with "knowledge" and "explicit knowledge" with "information"? (Wilson, 2002)

Disassembly, operated by the English author, reaches, at this point of the argumentation, almost the climax, though not stay around and included a final point, before conclusions – "people management" which in the knowledge management area literature is a major axis. And Wilson also attacked this argument showing patent contradictions in the documents and authors who sought to sustain it (Wilson, 2002).

Wilson concluded, and worth mentioning, his relevant conclusion:

> I see no reason to change my opinions as a result of the analysis carried out for this paper, but I would add that, according to the rhetoric of 'knowledge management', 'mind' becomes 'manageable', the content of mind can be captured or downloaded and the accountant's dream of people-free production, distribution and sales is realized – 'knowledge' is now in the database, recoverable at any time. That may be Utopia for some, but not for many. Fortunately, like most Utopias, it cannot be realized.
>
> This analysis of 'knowledge management' may not have much significance to the world of business practice, where the academic literature is rarely read unless filtered through the 'airport book'. One might argue that for information practitioners to call themselves (or for the organization to call them) 'Knowledge Managers' does no harm and may do some good, in terms of giving a higher profile to their role (even if a number of them are rather embarrassed by the title). However, the aim of the university and of those who work for it is to expose ideas to critical analysis and to inculcate in students the same abilities. It is, perhaps, a sad reflection on the way in which the university, world-wide, has changed from the 'temple' to the 'factory' (Beckman, 1989) (WILSON, 2002).

Consider now the third and final perspective that, first of all, is synthetic or, rather, can be seen as a synthesis that incorporates central aspects of the critical review, signed by Tom Wilson, and some positive achegas it is possible to harvest the first exposed perspective. Designated in this statement of "cognitive, infocomunicational and systemic" it is, as the underlying Wilson's article, linked to IS, but specifically (and unlike Wilson) to the trans and interdisciplinary IS, characterized briefly ago, in the first item, and based on the positioning of information management in the epistemological framework of this IS, amended in 2005 and 2009 (SILVA, 2005; SILVA, 2009) and joining other achegas (SILVA, 2006a; SILVA, 2009a; SILVA; RIBEIRO, 2009). It is, therefore, a perspective that is published in a scattered way and, therefore, deserves now be concentrated and explained as clearly as possible.

The IS is an applied social science, which means in its horizon is the theoretical research and also the resolution of problems through the concrete application of practical solutions. In its "DNA" exists research (axial activity of information scientist manager) and application dimension (natural activity of the information manager) – dimensions that can be designed separately and in everyday social, corporate and institutional life, of countries and international organizations, are mixed in a way

that is artificial or even absurd to cut or impose distinctions. However, later, in the last item, we will emphasize it, the trans and interdisciplinary IS accepts and needs to share with other sciences and knowledge as the research, as applied action in information management.

Anyway, it is appropriate to note that this trans and interdisciplinary IS does not abdicate founding understanding on information management in own bases, which refer to operational concepts that are structuring to it. And, in this sense, we do not think it is excessive to use attributes like "cognitivist", "infocomunicational" and "systemic".

Michael Polanyi, as evidenced, was misread or somehow misrepresented by Nonaka and Takeuchi, and Wilson coped very well in the topic of tacit knowledge, showing that there is a kind of intermediate knowledge – the implicit – that can be expressed, becoming explicit, and that this would be, without euphemisms or useless rhetorical, synonym for information. But Wilson could have gone further, since he admittedly resorted to Cognitive Science and Neuroscience: cognition and emotion make up the "cornerstone" psychological of the person, absorbing and processing stimuli, perceptions, experiences, which are very important or, better, that have an indelible reflection on the behavior of individuals, groups and these throughout society.

Managers and consultants are right in valuing this "tacit capital", but, are swift to be content in express it by KM (knowledge management). Managers and consultants emphasize and seek ways increasingly sophisticated of better "manage the personal capital", ie, to develop the "people management". In accuracy and at least in the academic and university context, it is appropriate to be rigorous, as well stressed Tom Wilson, there is no knowledge management, there is people management (personalities, individually and collectively considered). For perspective at hand, the distinction that can be done is only (and is already very significant and complex) between cognition and information. Inevitable inference since it is acceptable a definition of information, which we can divide into three "modules" and the first refers to a cognitive reasoning (VIEIRA, 2001, p. 296-313; TIBERGHIEN, 2002):

"MODULES"
I structured set of mental and emotional coded representations (signs and symbols) and modeled with/by social interaction
II likely to be recorded in any material
III and therefore communicated in an asynchronous and multidirectioned form

Source: SILVA, 2006: 25; DeltCI (http://www.ccje.ufes.br/arquivologia/deltci/)

Rounding a bit without falling into unnecessary simplifications, in the first module is molded the relationship between mind and environment, without cognition is reduced to an intrinsic faculty of the human and untouched by the influence of the environment – this influence is of course modeling. Still, in the initial module of definition, explicit knowledge is absorbed, because, at root, knowing is to represent mentally/emotionally, and from the faculty of representing result many, like to understand/realize, learn, discover, innovate, etc.

A scientific paper, with news and discoveries, is applauded as a good example of scientific knowledge, being, in itself, information, that we can gather the adjective scientific, while a note put in a prominent place in any kitchen, with indication of lunch or dinner, do not deserve the knowledge category, but is, phenomenologically, information to what we can gather the adjective domestic. And, so, one can infer that it is not necessary to use knowledge or even information as if they were distinct concepts because information/knowledge mean the same, and if we want to distinguish the contexts and the quality, value, impact, relevance to humanity, of the texts, we have to, perhaps, to adjective accurately: administrative, financial, accounting, scientific-technical, scientific, sporting, domestic information etc.

The second module has a hidden significance: there is a subtle but effective separation between content and continent. The coded representations are formed in the mind, materializing out of the knowing and "informant" subject, outside the mental sphere, through the function of registration or inscription on – a stone, clay, tablets, papyrus, parchment, paper, digital etc. The document appeared by inscription function, and it was imposed by another associated function, but not symmetrical – the transmitter.

Confusing information with document is a gross misconception that has been committed and that is present in the triad data – information – knowledge. The mechanistic view, naturally grown by information technology professionals, led to tie data and information to technological unity capable of producing them and process them as if they were not, somehow, a human representation, technologically mediated, or in other words, poured into a "technological support". Those who confuse information with document, thus revealing the pernicious influence of "mechanistic" theory of Shannon and Weaver, felt, obviously, the need of a word that means something less tangible, something of superior intellectual asset – the knowledge! They entered into a maze, complicating what, being complex, is simple and understandable for ethnologists and anthropologists: in "primitive" communities, the narratives essential to their identity are transmitted orally, which means that this is coded information (representations expressed in the language of this people, which is preserved in the memory of everyone and especially of some members with special status and power; information that needs not to be registered out through writing, because, in these communities, there was not writing yet, but scholars, arrived from the "civilized world", registered on paper, recorders and film, producing document which is essential to the occurrence of what is prescribed in the third module.

Having document, communication is enhanced – third module – but it is only enhanced, because communication is the full sharing of meaning, which means something more than the transmitting function. This is essential, but not sufficient: the assimilation of information becomes new information that brings or returns the "correct understanding of the meaning conveyed" (or not...) and so continuously processes the dialectical interaction between the communicators.

The epithet of infocomunicational, attributed to this third perspective, comes from the articulation made between information and communication through a "bridge"– the "classic" document or the document-media (docmedia), electronic or digital – the digital platform (SILVA, 2012). The document link promotes symbiosis of two specific phenomena – information and communication – creating a symbiotic phenomenon which is complex and is distinctly social, emerging and keeping in demanding and refined conditions, never guaranteed to match and that today are very facilitated by information and communication technologies, more accurately and with more semantic advantage, digital platforms.

For that in a company, a government or public institution, in any organic context, occurs and flows, with overall benefit, the infocommunicational phenomenon,

modernization and technological modernization is essential, and that means, today, the irreversible hegemony at all levels of our overall life, of the information technology, and its range of applications, meaning that the classical notion of document, forcibly constituted by paper (technological product itself), is to exist, losing more and more ground to the notion of *docmedia* or digital platform or technological information system (= hardware + software + human and social use). It is therefore understandable that this technological aspect and the extraordinary innovations that occurred over the past two decades, have inspired, as Tom Wilson showed, the name change and fad of knowledge management.

However, it does not cost much, perhaps, to realize that it is a reductionism, and as such, a basic mistake: forgetting the transition period of the structural cycle, or the time in which we live, the transition of mentalities and practices, as well as technical and technological utensils. This transition is not linear and symmetric, quite the contrary. And the ongoing transition helps explain that the management of information adds the old and the new, and the more we are able to enhance, with experimented and robust documentary techniques (in classification, indexing, preparing analytical summaries, among others – OTLET 1934, Chaumier, 1973; FIELDS, 2001; LANCASTER, 2004; DAYS, SHIP, 2007), digital platforms and their functionalities applied to the creation, organization, storage, retrieval, reproduction and transformation of infocommunicational flow – strong point of manuals and training events, made and intended for dealing with competitive/corporate/organizational intelligence, systems and technology management, etc – softer and efficient in an infinite variety of contexts, it will by shown in light of all specialties and specialists that are related and complementary to it.

As for the "systemic" attribute, which is, moreover, closely with what has just been expressed, it has to do with a design of the Information System which has escaped a little to the understanding of IT and computer management experts. Just remember, here, what can be read on the appropriate entry of DeltCI (and SILVA, 2006):

> To avoid misunderstandings, it is important to distinguish Information System, crucial operative concept in Information Science, from Technological Information System, in entry below. Considering the synopsis related to the concept of System, an Information System is a totality formed by the dynamic interaction of parts, ie, it has an enduring structure with a flow of states in time. Thus, an Information System consists of different types of recorded or not information externally to the

> individual (what each person has in his/her memory is the information system), no matter what the support (material) is, according to a structure (producing/recipient agency) prolonged by the action on the timeline. The structure of an IS is a complex aspect because it is paradoxically autonomous and indissoluble of information itself: the subject of action (whether person or institution) that produces and receives information flow is distinct from this, but it is essential so that this one exists. The identification of the structure becomes a defining moment for us to fix the precise contours of an Information System and this is done, in Information Science, through technical pole of Quadrupole Method, more precisely through operations *Observation and organic-functional Analysis*. And one must not forget that the structure of an IS is or may be conceived itself as a separate System. An example: a company generates (produces, receives and accumulates) information over time, which means feeding the existence of an Information System, whose structure is the company (with its internal organization and the agents or employees), which in turn constitutes one or more specific systems. The authors on Management area tend to see different systems in a company: management system; human resources system; information system; technological system, etc. But this duplicity of the structure does not cause any confusion if clearly seen: when the approach focuses on systemically conceived Information, designed and studied its structure can, in other approaches, correspond to a system, but in Information System it is and it remains stably as structure (DeltCI and Silva, 2006: 162-163).

The entry is still valid and, as such, is properly the way how, in the perspective in question, it relates to the notion of Information System and extensive practice of Information management. However, seem to us necessary two notes of clarification.

The first addresses the assertion that the information in the memory of people is part of IS. This information corresponds to the "explicit knowledge", by Tom Wilson, and it can be documented and communicated, provided that the representations are coded, retained in the brain, ready to be spoken or written, or memorized. This information was confused from Polanyi, with tacit knowledge, but neuroscientists and cognitive psychologists can help clarify that this kind of information is not faculty of cognition, although it is its product, or result. And further: this kind of information can be categorized as scientific knowledge, for example, if it is related to experiences, discoveries and ongoing experiments in the Natural Sciences, or to research results in other scientific fields. But we are also designating information

that includes anecdotes, songs, drawn, photographed, filmed images... Anyway, the information that is inside and outside the head, constitutes an active and ongoing IS, but, when the feeder structure of IS disappears, it virtualizes itself, ie, it stays to its informational "shadow", designed in the information (of all types and sectors) that configure the materialized and maintainable IS, without limitation.

The second and last note has to do, ultimately, with the transversality of information management, precisely because the information is intertwined with other "objects" of study and consideration, in light of global strategic management, whether that entity or context is.

Carlos Zorrinho, in 1991, looked at a company, considered it an open and dynamic system, in constant evolution and adaptation, and invoking the legitimization of general systems theory (Berthalanfy), decomposed it in the management system, information system and structure system with other systemic varieties (ZORRINHO, 1991: 36-53). The exercise of Zorrinho shows – and this is positive – that the organization is a puzzle composed of parts that can be seen and studied with a view to practical approaches as specific systems, which requires to recognize that information management, focusing on IS, does not exhaust the systemic complexity of an organization, whatever it is, before it is enriched with the inputs of other looks and approaches. But, also, it is clear that his design of information management, reductively technology in the matrix, became hostage to definitions such as that proposed by Le Moigne to information: "formatted object artificially created by man, being intended to represent a type of identifiable event in the real world" (ZORRINHO, 1991: 43); or the one proposed by David and Owen: "information is data processed in a way appropriate to the means of processing, with real and perceived value in current and prospective taking decisions" (ZORRINHO, 1991: 43).

Experts and specialist obsession, which marked Modernity and led Edgar Morin to suggest the urgent change of "Method" (because of complexity), supported by a cyclopean analytical and reflective work, made possible absurdities clippings of complex phenomena, but gradually each one will realize that the atomization of reality becomes incomprehensible. Therefore, information is psychological (and social) and social (and psychological) communication and its systemic approach absorb, naturally, the technological as a positive extension of the human.

In short, we can close this item, intended to systematize a debate which we consider essential, and we assume the natural adhesion to "cognitive,

infocommunicational and systemic" perspective, that is constructively synthetic. Hence, for example, the easy incorporation, in a possible guide, to the information manager of IS matrix, of many of the considerations of Jose Rascão in his work, and despite its framed perspective and training in others assumptions and principles (Rascão, 2008). And open, inasmuch as it is not rejected that management experts consider useful to maintain the distinction, in our view unnecessary and artificial, between information management and knowledge management. However, in the epistemological framework of trans-and interdisciplinary IS, the professional with undergraduate and graduate degree receives a vision and skills of information manager, a word that means the same as knowledge, which requires that we opt for one or another expression and give up keeping trying reconciliations and acrobatic joints that do more to confuse than clarify.

We can not but regret that colleagues in the area of documentation and information spend time in such exercises. We mentioned in the list of the first perspective advocates, some Brazilian colleagues, but there are also other nationalities. Antonio Garcia Jiménez, expert in informative documentation and on "documentary languages", published a book in which he essayed paste the documentalist, he is in matrix, to the expert knowledge "invented" by the information technology, when, as we shall see in the next section, it is possible to form by root a Information management that has an array of applied social science (IS) and an incorporation of technology and Internetica component (domain of all kinds of digital platforms, including data or "knowledge" bases and the web 2, 3 and so on...) quite appropriate and effective. Garcia Jimenez said:

> Another point that shows the overlap of some aspects is the professional. The knowledge worker is a specialist who handles the web, who is able to structure and organize knowledge bases and who supports the installation and maintenance of software, next to a large extent for journalists and librarians and documentalists. If you give a revised figure of chief knowledge office (CKO), also known, among other expressions, as director of knowledge transfer, we realize this statement (Davenport y Prusak, 1998): dedicated to support learning, design, creation and supervision of the information system, library, knowledge base, computer and human networks, and research centers. Also form part of his duties relationships with providers of information and knowledge as well as its valorization (García Jiménez, 2002: 67-68).

Interestingly, this author recognizes that the documentalist was perhaps quite distant from the "project knowledge manager", because this would deal with "team work management of delimitation and adaptation of customer expectations, with work with budgets and, finally, with identification and solution of problems that arise"(García Jiménez, 2002: 68). He recognizes, after all, that in this "limbo"of knowledge, there are people who must be prepared to manage people and that a good manager of people is not distant from being a great chief executive officer, genetically a CKO, to be able to work... And to advise him must be obligatorily a dynamic and extremely efficient team (institutionalized in Sector, Division or Department) of information management with high level of technology (pure and hard IT and IT professionals).

In another version of this study we continue this topic, detailing the essential features of the information manager profile formed by IS taught and researched at the University of Porto, since the 2001-2002 academic year. Here, we intend to explore something that until now was getting to the edge of the confrontation between the operative notions of information and knowledge, although it is an indispensable topic. Resting, as it was stressed in the above definition of information, stops making sense any effective distinction between information and knowledge (explicit), but at the same time you must understand very well that there is a varied and extensive range of informational types naturally dependent of production context and hence of use. This is therefore a matter of the last item of this text.

Countering the "informational typology" to the ambiguity of knowledge

Situation, context and environment are quite in use concepts in Informational Behavior and Information/Knowledge Management/Competitive Intelligence, working especially well in conjunction with two dimensions increasingly crucial when dealing with the information: the value and quality. The value, understood as assigning a certain direction (or appreciative judgment) regarding the produced or received information, organized and communicated, requires validating presence of an organic-functional context, ie, a concrete unity of action defined by clear objectives, supported on specific material means and on technology and served by social actors with certain roles and rules. In turn, quality concerns internal aspects,

ie, the accurate determination of the predicates of information, such as: consistency, relevance, accuracy/evidence and longevity (JAMIL, 2014: xix). The value throws itself clearly in the triad situation– context-environment, while the quality, though not directly delete this triad, constitutes the genesis and identification of informational typologies.

We recognize, immediately, that enter the expression informational typology cause some surprise among Management experts and certainly even more among information technology professionals who provide application and support to management processes in various organizations. However, we rely on something that has centuries of use, incorporating a specific knowledge within the so called Historical Sciences, more precisely the Palaeography, the Codicology and especially the Diplomatic. The decoding handwritings since ancient times and parallel analysis of manufacturing of the codex on parchment, folded in notebook, sewn, bound, as well as more detailed analysis of the text proper size (spot formed by the lines of words, ordered and aligned within margins of the sheet of paper or parchment) in symbiosis with the material or support dimension (which includes the ink adhering to the paper parchment to be used with pen and therefore the writing process to be done by hand, resources is essential methodical when it gave the invention of the printing press, generalizing printing technology, today confronted with the digital, the internet or on line...), constituted to investigate the so-called "historical truth" that depended, for example, a strict match between external authenticity of the text (information), ie, that text had been entered on a particular date (and only then) the appropriate support, reproductions of the same text in brackets manufactured or obtained subsequently have not satisfied the essential category for the historiography of the original document. Autographs and the Apocrypha, ie, originals and forgeries still dominate the universe of legal evidence for the validity of contracts and accounting and tax documents, but on a completely different base material, the technological point of view: this distinction playing with a conceptual definition suit composed of conjugated evidence, evidence and proof in the complex and dynamic framework of digital platforms (SILVA, 2011, and 2012).

Our proposal in this paper is therefore to recover teachings "classics" that can be useful and timely in the context of Information Management. And, first, the idea is starting to show how one can overcome with a clear advantage, the counterpoint information – knowledge before investing in an analytical framework that helps us to identify and distinguish the information under widely varying types depending on

where it takes actors and the locus of action (situation, context and environment) and depending on the respective value and quality. In the previous items, but especially the second, we intend to demonstrate the misconception still very entrenched in a number of heads of the alleged qualitative differentiation between information and knowledge, and here it must be to find the path, based on secure elements arising from interdisciplinary research, to undo the mistake and allow work with information in a mature and highly productive way. Specifying a little more, uphold the "thesis" that is equivocal value a text (an article, a report, memorandum, etc..) That only contains new releases (obtained as by an alchemical process in which information "not worked or processed cognitively" is converted into knowledge...), claiming that this only matters for decisions to belong to the higher level of "knowledge". The scientific support, particularly through the Cognitive Sciences, is nonexistent, and that becomes increasingly apparent is that if we understand the information "as a structured set of mental and emotional coded representations" Products/informational sources are not opposed to the notion of explicit knowledge: absorb it. We are thus faced with a full synonymy. And the challenge that arises becomes simple and complex: identify informational numerous different acts (concrete events mentally and emotionally represented by one or more codes, besides the language) that match the precise types, taking into account the situation, the context and environment surrounding them and influencing. Simple, because we must avoid dubious subjectifications (reducing the notion of explicit knowledge to scientific knowledge, with its specific function of contributing successive discoveries, new releases, which is a practical absurdity...) and follow the evidence. Complex because of the diversity of informational acts, even in micro and small enterprises, generates typological similarities and overlaps as well as the types materialize on stands today, the same kind may be born digital and exists in parallel, on paper or stay in digital does not necessarily only in fixed or portable computer, may find themselves in servers that support the genre cloud applications like Google Docs or Dropbox, etc..

At the entry probative value of Electronic Dictionary Terminology Information Science, reads something that is appropriate to attempt rehearsed here to operationalize the informational type at all levels of management activity in Organizations:

> the evidential or evidential contribution of Archivist is very helpful since transformed immediately in a complex and fundamental sum, namely situation informational type + Organic organic memory context + need + = interactivity varying levels of

evidence (seen as an important ideas about the nature of the component process by which humans construct and uses arguments). SUM accepting any informational type from the legal to the poetic or musical and allows the information science rather than the truthfulness of the information that produces or uses, monitor / study will be aggregated as truth, untruth and other "semantic ingredients "in short, more and more information over such a dynamic process, as endless. a summation, in short, who is summoned by the full value of information.

Explaining the complex sum, which was stated in the entry, it can be stated that the data type is deeply conditioned by the situation and the organic context in which it is generated, becoming thus the raw material for all acts of management. But, as an input of the management process, it is essential to incorporate and be monetized as asset called "organizational memory", which, strictly speaking, should be understood as the capacity that organizations must retain for a long time and medium (conservation short of accounting documents has long been prescribed by tax law, although only meets the requirements and principles of taxation) of information that becomes necessary. The Documentation Centre Archive function or function translate that ability, that developed in modernity, but today, including with the change of material support, this type of functionality is in charge of servers with banks of powerful and extensible data they need providing the assurance of a safe preservation without limits – which, of course, is a crucial now to be fulfilled and technological challenge. If the "organizational memory" does not deserve much attention seriously weakens the principle of satisfaction of (short, medium and long term) information needs, as well as unfeasible is all based on interactive performances.

Explained the operating framework of coneito "information such as" the time has come to draw the scheme that allows implementation in the "field".

For this we can follow in order to examine it critically, the dominant view in Information Management, Knowledge Management in the Competitive Intelligence or the valorization of the decision-making axis around which revolve indispensable information for this goal, subordinating how many other less or little relevance to decision-makers.

Decision making is, in the abstract, decisive, but can contain a high degree of imprecision. First, in the upright and, even more, in flatter organizational structures, there is no single level that concentrate all decision making; the decision will be made at intermediate levels, and project teams to analyze and conclude what is valid and

relevant in a regular and constant. This means that the approach generally taken, and that puts the decision in the top of the pyramid or the surrounding dome of the various project teams, is clearly reductive. It seems therefore clear that the decision process is complex and crosslinked with multiple activities and tasks in all sectors of the Organization.

Given this finding, we find two imperatives: it is inevitable periodic census of informational types, which implies, within each company or entity, an extensive list periodically revised; and use of the methodological criteria proposed operation evaluation of information flow (SILVA; RIBEIRO, 2014: 19-41; Ribeiro and Silva, 2004: 7-37). Strictly speaking, the combination of these two requirements can operate using a scale in which the three parameters defined [established] from defining strategic instrument of the entity's mission, its goals and objectives, and additional instruments with successive organic and functional changes encompass an indefinite number of informational types. For instance, it is important that the concept becomes clear and do not feed any doubt, if we identify a technical report, a memo, a letter, a balance sheet, an invoice etc, we are implicitly naming different informational types, because each of information are cited (structured set of mental and emotional coded representations – Silva 2006: 25) organized internally in its own way that fits the nature of the global regent sense (taking into account the situation and context of production and communication of that meaning), inscribed on a tangible medium, and such registration entails significant adjustments to the content (information) to the form (due to the material basis of registration). Information entered a support became the "classic "formula to define document operational concept that the widespread use of information and communication technologies do not become obsolete before forced a metamorphosis that led to docmedia (SILVA, 2011; 2012).

Mentioned above the grid used in the operative part of the evaluation of information flow, as appropriate methodological operation in technical polo quadripolar method (SILVA; RIBEIRO, 2010: 9-11), because it is beneficial to the delicate task of distributing real-time and subsequently, the information that is being produced in an organizational context. A grid or outline formed by three parameters:

- relevance: "literally means belonging to the action of someone or entity can be measured, in informational terms, through the essential triad OBJECTIVES (reason for being) and SKILLS STRUCTURE + / + MEMORY FUNCTION, a gradation of three levels (A, B and C), corresponding to a direct, indirect

or peripheral relationship of informational documents with the statement triad" (Ribeiro and Silva, 2004: 24);

- density: "exactly means quality of what is dense, thick, compact, implies, in informational terms, whether an act or document is primary / original, with / without duplication / exact copy, or if it is secondary (or summary synthesis and accumulation portion of primary / original documents), with / without duplication / copying" (Ribeiro and Silva, 2004: 24);
- frequency "means amiudada repetition of acts or hits [hits] [and] is understood here as quantifying the frequency of use / access to information, whether at the stage of production / reception (reproductive or operative phase, also called current or administrative) or in the immediately subsequent phase (stable phase, post– reproductive and post– operative, which is perennial and permanent, as well as progressively more open to external access to the file system) and can get the results in both phases fully enlighten us on whether or not there is an "intermediate use" (debatable) and even if it is true or not that the Administration fully loses the need for access to information over forty years old" (Ribeiro and Silva, 2004: 24-25).

Already tested robustly within the operation of the methodological assessment to determine the documentation that must be preserved, while organizational memory fully accessible and available, be recognized here for the first filing an application in the sense of decision-makers lean on criteria that help collate information as to their organic nature, ie, be more or less consistent with the mission of producing / collecting entity, its general and specific objectives, as well as its density, ie, just because they are dense documents fragmented and more dense because the condition of the cumulative concentrate them piecemeal.

The guiding formulation of future applications interests above all explain that there are informational types / documents, indelibly linked to the specific mission and purpose of the entity or organization, the minutes of the meeting of the Directing and / or Board of Directors; correspondence or emails; chips from customers; chips from suppliers; technical and scientific information about 'product' core business; etc.. That this type of information (documented) is permanent conservation, there is no doubt as to the expertise developed in assessment procedures according to the grid and Silva Ribeiro, but exciting, now, is to check whether the level of relevance A, B and C can help decision makers to the extent that they fit and show there use to them in that separation

of information within that parameter as well as the density and frequency translate some efficacy in the "field". Note also that there are B-level information – financial and accounting – which corresponds to the so called medium activity (the level is the "end activity") and that should not be seen only at interest for checking accounts and audits, or attestation from the competent tax authorities. She has a predictable decision-making interest in GI and Competitive Intelligence literature goes unnoticed (Choo, 2003; Rascão, 2008 and 2012, and Tarapanoff, 2001 and 2006).

One thing, too, seems certain: in small and medium enterprises and, desirably, in micro businesses, decision-makers need help, the complexity of such "paradigm del maze" (Grompone, 2011) in which we are immersed. The maze has informational inputs and, increasingly, seems to have no outputs with complete and solid answers. The superficiality, fragmentation, the ephemeral contents hang heavily on the information behavior of digital included, that do not necessarily show (and the problem is to escalate) satisfactory levels of information literacy, ie, levels of critical ability to search, selection and use of information sources on the Internet or on paper. On the contrary, mastering the technology and browse the internet does not mean agility in terms of literacy. Hence it becomes obvious the need for, either by outsourcing or consulting, the presence of an information manager that monitors and updates [update] the technological dimension (internet access and appropriate use of open source applications) and ensure organization and practices of the most efficient retrieval of information, located and organized for use within the company.

Specific task is the implementation of the GI scale and Silva Ribeiro, with a view to taking decisions by the entrepreneur and his partners, the top management of the company. The mapping of informational types distributed within the relevant parameter, the respective levels is a priority and essential step. Opens here an expected line of major results on the impact that a systematic activity of GI decision-makers can have on your decision behavior and the economic results of the company.

The formulation is released; an investigative streak that needs to be explored...

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Information management as a strategic resource in Águeda School of Technology and Management

Sónia Catarina Lopes Estrela

At the end of the industrial capitalist era, a "post-industrial" period, a new society of "services" or "free time" arises, in which information acquires a central value. In this society, the production of information supersedes the production of goods, becoming the leading consumer good and, increasingly important, assuming the role of promoter of the new economy, in which whoever dominates information dominates the world.

It is in this context that the expression *Information Society*[1] emerges, an operative term primarily used by sociologists to describe the socio-economic impacts of new information and communication technologies, highlighting the importance that information holds for the successful development of organizations. Indeed, the success of organizations is related with the efficiency and effectiveness of the use of information in their daily lives and with their ability to store and retrieve it.

1 The concept of Information Society first appeared in the work of Alain Touraine (1969) and Daniel Bell (1973) on the influences of technological advances in power relations, but only put forward in the White Paper on "Growth, Competitiveness, Employment: the challenges and ways forward into the century XXI". This document, published in December 1993 in its original version, devotes a section to Information Society. Here it is argued that Europe has the necessary know-how and experience for the implementation of a common information space.

Information is only useful, if properly organized for quick localization and use. This is fundamental in a good management because this new society demands quick responses and reasoned decision-making. Thus, this article follows a study of information management at the Águeda School of Technology and Management (ESTGA) and aims at proposing a model of information management to support the responses to the challenges of the Information Society.

We refute the traditionalist and passive vision of information services – ensuring that information is available whenever a user requests it, and defend the vision of renowned authors in the information management field, such as Choo (2002), Davenport (1998), Drucker (1995), McGee and Prusak (1993), who see information as key resource and its management as strategic tool. We advocate an information management based on the definition of criteria for production, organization, storage, selection, dissemination and use of information that will allow the organization to be more competitive in meeting its goals and mission. For this purpose we adopt the Integral System of Active and Permanent Information model proposed by Pinto and Silva (2005).

Information management: a literature review

Because information is the promoter of this new economy, it is something that no organization should overlook. But what are we talking about, when we use the term Information management? This comprises a diverse set of activities: production, processing, recording and custody, communication and use of information, assuming that we deal with, manage and find practical solutions. Choo (2002: 24-5) defines information management as

> "a continuous cycle of six closely related activities: identification of information needs; information acquisition; organization and storage of information; development of information products and services; information distribution; and information use. (...) The conceptualization of information management as a cycle of interrelated information activities to be planned for, designed, and coordinated provides a process-based perspective that complements the more conventional views of information management as information technology management

> or information management resource information. (...) The process model of information management should encompass the entire value chain (...)" .

We can conclude, from the analysis of the definition, that the author does not see Information management as a scientific discipline, since we have a set of sequential activities related to the production/acquisition, processing, recording and custody, communication and use of information.

The same is true when analysing the definition of Zorrinho (1997: 21-2)

> "function that connects and combines the design of information systems with the dynamic design of the organization. It is therefore a function at a strategic level, which must be performed at the highest level of organization's structure (vice president or the president's direct assistance or general director). Its tasks are multiple and differentiated, being the information manager, first of all, a strategic controller". (...) In addition to the personal skills of leadership and communication, the information manager must have a solid background in management, good training in planning, design and information systems management and some knowledge of computer technology and its evolution".

Davenport (1998), in turn, states that information management is a process, i.e. a structured set of activities that include how companies get, distribute, and use information and knowledge. As a process, it is required through the various sectors of the organization. However, the main focus of the process should be on the needs and satisfaction of customer information, which makes informational management really effective.

This perspective points out that Information management involves exchanges, relations between the various sectors, which in practical terms means engaging the entire organization. Following this reasoning, McGee and Prusak (1993) propose a procedural model of information management (figure 1) and reaffirm the belief that it plays a key role in shaping organizational strategy, once it might allow opportunities and alternative strategies to become more competitive.

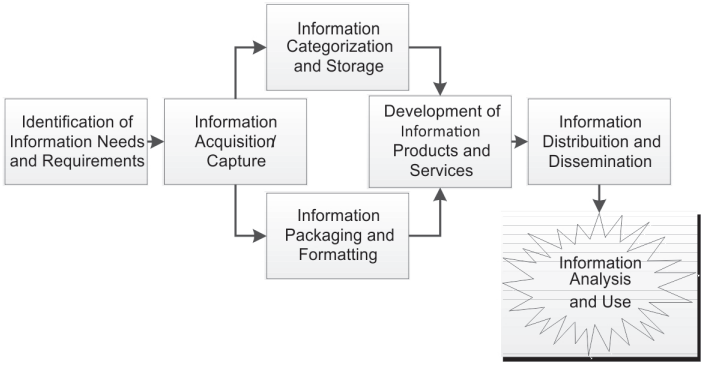

Figure 1 – Information management Process Tasks (Mcgee and Prusak, 1993: 106).

This model only reaffirms the perception of many authors, namely that information management is a process that begins with the identification of information needs, following a certain procedure that will allow its analysis and its use. This procedural model implies the development of a set of activities: collecting information; classification, storage; treatment and presentation of information (from which information products and services will be developed and their dissemination and distribution can be ensured), that after realized should give an effective response to the needs of those who are looking for it in their dual role: users and beneficiaries of such information.

The same authors (Mcgee and Prusak, 1993) state that the creation of an Information System[2] is relatively easy when based on pre-determined needs, but that the difficulty tends to increase exponentially when it tries to go beyond this analysis and to anticipate these needs. It is here that new information professionals should affirm and make a difference since they can achieve strategic value.

Pinto and Silva (2005) go one step further than Mcgee and Prusak in their proposed model for the study of information management and present the Active and Permanent Information System Model. This model will serve as reference for

2 An Information System is "A totality formed by the dynamic interaction of parts, i.e., an enduring structure with a flow states in time. Thus, an information system consists of different types of recorded information externally to the subject or not, no matter what the support (material or technological), according to a structure (producing agency/recipient) prolonged the action on the timeline" (Silva, 2006: 162).

the present case, which was also the model followed in other cases, namely: by the Municipal Active Information System Indaiatuba – SIMAI (Masson, 2005) and the Municipal Information System of Vila do Conde (Pinto, 2003).

The Active and Permanent Information System Model is an information management model (figure 2) that embraces and calls for the involvement of the entire organization. It requires knowledge of the context, relationships of the structure and information flows that are established between the agents. It is based on the assumption that "systemic, holistic and complex, finding their ontological and epistemological foundation in Information Science" (Pinto, 2003: 1), which allows to study the entire information process from its origin, through its course, to its final destination.

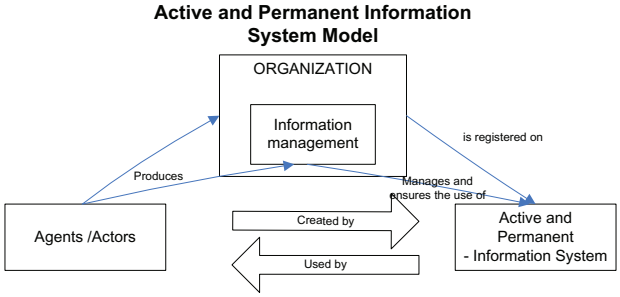

Figure 2 – Active and Permanent Information System Model (Pinto and Silva, 2005: 8).

The Active and Permanent Information System Model, which has its founding in a Quadripolar method matrix, consists of four modules. The first module contains the entire scientific research that focuses on the organization as study object, on the "phenomenon and info-communicational process occurred inside", the environment in which it moves and on the inherent Information Science problems with the objective of understanding and explaining the circumstances or problems to be addressed (Pinto, 2003: 1).

In this module hypotheses/theories (theoretical pole of the Quadripolar method) are formulated, to adopt and use techniques and obtain information for research/scientific study (technical operations of the technical pole), aiming at understanding and explaining the organizational case or the issue/problem/situation under study (Pinto, 2003: 1).

The adjustment of the theoretical and practical suitability of the theoretical research to the specific case of the implementation of the Model occurs in Module II. According to Silva and Pinto (2005), a "pivotal schemata" should be prepared and developed, bringing together, on the one hand, the results obtained according to the methodological assumptions inscribed in the first module and, on the other hand, empirical evidence needed to intervene in an organization. Usually organizations need to:

- decentralize their activities (just jobs) through its increasing computerization;
- increase security and control of access to the information system;
- ensure greater control of the authenticity, integrity and reliability of transactions and of the Information System;
- ensure the use of information in the medium and long term;
- deliver services in a consistent and equitable manner;
- document policies, decisions and results for all parties involved;
- protect the rights and interests of the organization, its employees and customers, etc.;
- prevent emergency or disaster and preserve corporate memory (Pinto; Silva, 2005: 10-1).

These issues have, mandatorily, to be addressed. Therefore, the intervention in the information management should be preceded and defined by a detailed plan, focused on how the information should be produced/received, reproduced and disseminated/accessed. After the development of this plan, the transposition is done to the case, in phases (Pinto; Silva, 2005: 14).

In the first phase, and as a result from modules I and II, an organic-functional framework is obtained that reflects the structure and activities of the organization over time. Then, it is necessary to know all the information produced, regardless of the material and age (Pinto; Silva, 2005: 11-2).

The implementation of the Active and Permanent Information System Model is the step which falls on the third module (regardless of whether it is a global or partial intervention in one or more critical sectors in the functioning of the organization).

Its implementation should be made by sectors, favouring those previously identified (prioritized in this restructuring), which determine the sequence of this implementation to other sectors. To accomplish this task, it is essential to set up an

interdisciplinary team that ensures not only the evaluation of information flow but also the tools for information retrieval (Pinto; Silva 2005: 12).

Finally, we have module IV, in which scientific research takes place over the implemented model, as well as its monitoring. Basically, the evaluation grounded on this model should be looked at as an ongoing process, because it is a dynamic reality.

By adopting Active and Permanent Information System Model, our main objective was to design the guidelines for the reformulation of ESTGA's Information System, aiming to reach a more efficient and effective operation to support the overall policy of the organization.

Characterization of the case

Bearing in mind all theoretical and institutional background related to Information Science (epistemological pole) and, in terms of methodology, from the point of view of inductive rationality, and taking as reference a theoretical framework based on the new post-custodial dynamic informational and scientific paradigm (theoretical pole) and on a Quadripolar methodology, we conducted our case study (technical pole) starting to adopt the Active and Permanent Information System Model first three modules.

Module I covers scientific research (theoretical and technical) about an organization, the phenomenon and the info-communication process occurring inside and/or its interaction with the outside environment. In Module II, we adjusted theoretical research (gained during training) to the specific challenge/case selected to implement the model (Pinto; Silva, 2005: 16-7).

The third module is the implantation of the Active and Permanent Information System Model at ESTGA, having selected the Administrative Secretariat, as "pilot sector", because it centralizes a significant part of the organization's activities and was considered as a priority sector. This module consists of four phases: the first results in the organic and functional analysis (since 1994), which allows the knowledge and understanding of the objectives, skills and functions of the different departments (through the collection and analysis of legislation and regulations; the information produced and interviews with employees); the second phase requires that all information must be considered, regardless the materials and age, i.e. so that we can think of the technological solutions with

the necessary coordination within the entire Active and Permanent Information System Model, it is imperative to gather the information produced, received and sent, as well as the definition of a set of tasks aiming at rigorous parameterization of requirements and functions required for integrated informatisation in the Model; the third phase involves a sectorial implementation, i.e., starting by selecting the "pilot sector" and that strategy will determine the sequence to be applied to other sectors; phase four involves the establishment of an interdisciplinary group with a view to monitoring the sectorial implementation of the model and the evaluation of information flow and tools for information retrieval (Pinto; Silva 2005: 12).

Some of the steps taken in the practical implementation in the case study, inscribed in module III, we can refer:

- surveying the information produced and crossing it with the organic-functional frameworks, hence resulting in the quantification and classification of informational production and respective materials;
- analysing the existing information technology system *(*hardware and software*);*
- surveying, analysing and representing organizational processes, defining circuits, agents and informational production (this phase is crucial for the knowledge and description of the organization in its multiple facets. Indeed, it is the basis for the analysis and design of new processes, allowing to identify the aspects that should be redefined and also functioning as an excellent means of organizational knowledge);
- structuring of information management service/Archive service;
- controlling the whole informational production (in several materials), following the information entire life cycle of, standardization of document models used and converting them (the few that do not exist) in electronic format and creating meta-information (which must meet strictly defined criteria and principles);
- developing a classification to use as information is produced;
- evaluating information in accordance with the criteria and parameters of the theoretical model designed by Silva & Ribeiro (2004);
- adopting electronic management of documents and workflow tools with a view to streamlining tasks and effective internal and external informational communication;

- adopting an integrated information management, taking into account the organization specificities, supported in the implementation of information and communication technology. This solution should allow to have among other things: fast access to documents (with research on metadata and free text); control the workflow; greater security when accessing documents; increased productivity and reduced costs (time, paper copies)[3];
- monitoring services to producers and involvement in organizational change processes (beyond the issues associated with the adoption of new methods and forms of work, must include actions to raise awareness among employees, alerting them to the implications arising from working daily with official documentation);
- identifying strategies, tools and solutions to implement in the selected priority sector: the Administrative Secretariat.

These steps have as ultimate goal the redefinition of ESTGA's Information System of that, as part of this broader system (the organization itself), should be in tune with the whole (organization) and the management model adopted by and for all this. Parties converge on the whole, from a systemic perspective: all subsystems that are part of the organization are in unison and the Information System is no exception.

Each organization is unique, has its own culture which gives it an exclusive character and its own management model of the information system. The model is inseparable from that organization in concrete because it is the measure of its uniqueness and particularity, perceptible through knowledge of its context, structure and processes. By knowing these factors, we have an instrument to describe and understand the current reality (which promotes its actual performance) and, simultaneously, we are designing a tool to act and converge to achieve the desired results.

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3 Among the features that the program should display, some are: integrated document management; research on metadata or free text; document classification; document versions; action automating on document conversion to another format; sending *email notifications;* automatic counters; ability to define custom actions; requisition and return of documents; adding documents to processes and processes to processes; configuration rules and workflow; defining templates with structure and rules; integration of different database systems and integration with the authentication information engines. It is also important to maintain joint and integrated management of all information, regardless of its age and the time it was produced, associating it with the historical process in which it is inserted.

When designing a functioning model of an organization based on the analysis of processes, we are making a representation of the organization, i.e. "taking a picture" of that reality. In the philosophy underlying this analysis, it is assumed that if we want to achieve other goals, we have to create a new reality, refine the model, modify and transform one or more processes of that model. It is essential to know the current processes to determine the critical points and the improvements to be included for the development of future model.

The desired results will be obtained detecting the critical points of the current model and identifying the changes that should be introduced. Often, to be able to generate the desired results, it is not necessary to modify every circuit, but just to improve some, or, occasionally, to create new circuits or, ultimately, to design a new organizational model.

To understand and interpret the organizational model, it is important to know the connection between the informational circuits and the activities, the formal structure with informal systems of internal relations, desires and expectations of the (internal and external) actors involved and its connection with organizational and management variables.

Once organizations know and understand their current organizational model, they will be able to recreate or redefine new policies and strategic directions to develop new methodologies, as well as labour and management tools. The knowledge of the current model can also lead to restructure the organization itself and the re-think the goals to achieve.

A model of efficient management is, therefore, paramount, because we live in times when competition is fierce and, to survive, it is necessary to demonstrate quality and competence in all that you do – in this scenario, excellence is crucial. The days, when customers were girt to what the market offered them, are gone. Presently, customers have their opinions, ideas, needs, expectations and well-defined tastes. Organizations should know the wishes of customers and offer them products/services that even they would not expect, anticipating and creating new needs.

Customers or potential customers have a comprehensive range of options to meet their needs and if the organization fails to meet their expectations, they will certainly look for solutions in competing organizations, best suited to their requirements and needs. Thus, each organization must seek new management ways to ensure that customers seek for their quality and excellence; otherwise it will be constantly falling behind its competitors and will disappear, because

they cannot captivate new customers, they are not able to fulfil the objectives for which it was created.

It is vital, to any organization, to monitor the external environment, once, on the one hand, the internal environment can be controlled by the organization managers (as this results from action strategies defined by them), and, on the other hand, the external environment is not under the organization's control. This should not rep Active and Permanent Information System Model resent alienation of the organization from the outside, on the contrary, it must be able to have an in-depth knowledge of reality and monitor it frequently, in order to take advantage of the opportunities and avoid threats. Indeed, although it is not always possible to avoid the threats, it is possible, with proper planning, to minimize their effects.

Context

Águeda School of Technology and Management (ESTGA) is located in the city of Águeda. This is the largest city in the Bairrada region and lies 50 km from Coimbra, 20 km from Aveiro and 75 km from Porto. Águeda is the third most populous municipality in the Baixo Vouga (with 12,5%), surpassed only by Aveiro (18,8% of the total population of the Baixo Vouga) and Ovar (with 14,1%), with a younger population than the rest of the continent.

It is a highly industrialized municipality and in need of skilled labour. Therefore, since 1983, people began to discuss the possibility of a polytechnic school in Águeda. However, because of several factors, it appeared only in the end of 1994, i.e. on 19 December 1994 with the publication of Decree-Law no. 304/94[4].

After many vicissitudes, the activities of ESTGA started in October 1997, after the Decree-Law n. 180/97, 24 July. It was separated from the Polytechnic Institute of Aveiro and has committed its integration in the University of Aveiro, safeguarding the respect for nature and goals of polytechnic higher education.

Thus, ESTGA was the first Higher School[5] to be integrated in the University of Aveiro, in compliance with the provisions of Article 2, paragraph 1 of Law no. 54/90

4 Decree-Law n. 304/94 also established the Polytechnic Institute of Aveiro, in which ESTGA was integrated.

5 Besides ESTGA, other UA Polytechnic Schools are: ESAN (School of Design, Management and Production Technology Aveiro Norte), ESSUA (School of Health of the University of Aveiro) and

(status and autonomy of Polytechnic establishments) "(…) high schools are cultural and technical centers, which prepare highly qualified professionals for their activities and promote regional development"[6].

This was, undoubtedly, one of the objectives that underpinned the creation of ESTGA. Indeed, its creation was intended to contribute in particular to the integrated development of the region of Aveiro and the revitalization of existing industry.

ESTGA's main objective was to offer training based on new techniques, particularly in multi-purpose technologies, especially in the industrial areas with significant district and regional implementation, and in particularly fragile areas at the national level. These guidelines allowed tracing the implementation of the various courses to be ministered. Thus, in the academic year 1997/98, ESTGA began its teaching activity with the BA courses in Electromechanical Engineering and Geographic Engineering. In 2000/01, four more courses were ordered: Electrical Engineering, High Studies in Commerce, Public Administration and Local Government, Office Administration, and, in 2002/03, Documentation and Archivistics[7].

Structure

To comply with its objectives and its mission, ESTGA needs to "structure" itself and adapt to changes. The structure of an organization is closely related to the context in which it works, since its modification can be explained by factors or variables of the context.

ISCA-UA (Institute of Accounting and Administration of the University of Aveiro).

6 Law No. 54/90. *DR I Series.* 205 (1990-09-05) 35-80-3589.

7 Since its establishment, and until the academic year 2006/07, ESTGA offered seven undergraduate degrees. With the implementation of the Bologna Process, the school they were six, namely: Documentation and Archivistics, which results from the adaptation of bachelor with the same name; Secretariat, which results in the degree course of Office Administration Studies; Information Technology (with Branches of Enterprise Information Systems, Information Technologies and Geographic Information and Communication Technologies), Public Administration and Local Government, which results from the adaptation of bachelor with the same name; Retail Management, resulting from the adaptation of bachelor de High Studies of Commerce; Electrotechnical Engineering (with Branches of Mechatronics and Electrical Installations), resulting from the fusion of the courses of Bachelor of Electrical Engineering and Electromechanical Engineering and, in academic year 2010/11, a degree in Quality Management.

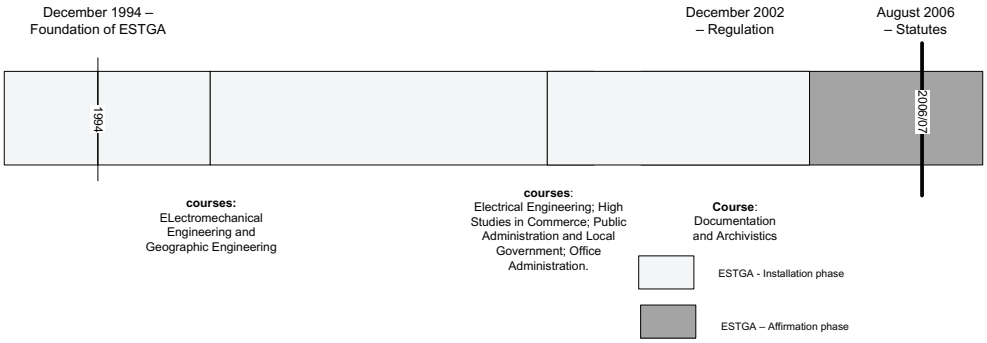

Figure 3 – Timeline of ESTGA's organic-functional phases.

The structure is a complex set of variables as to which administrators and managers make choices and decisions. It defines how tasks should be designed, specifies who depends on whom and establishes formal coordination and control mechanisms (Bilhim, 2005; 246).

After analysing the sources to know the structure and evolution of ESTGA, we have noted that, since its creation and until the 2006/07 academic year, in structural terms, it had two different phases (figure 3). The first phase, which we call "Installation phase", extended from its foundation[8] until the end of 2005/06 academic year of, with the approval of its statutes in 26 September 2006, followed by the second phase, after the approval and subsequent publication in the *Diário da República*, which is ongoing, called the "Affirmation phase".

ESTGA is part of the University of Aveiro's (UA) macrosystem, with equivalent status to a department. According to its statutes, the University is structurally organized in Departments/Autonomous Section[9], and Polytechnic Schools – organizational units endowed with human and material resources in order to accomplish its functions. Departments enjoy scientific, pedagogical, administrative and financial autonomy, under the UA's statutes[10].

8 ESTGA was formally established in December 1994, but only started its teaching activities in 1997/98 academic year.

9 There are 15 Departments and 2 Autonomous Section at UA, that are interrelated according to the interdisciplinary courses that integrate or research areas that share.

10 Article 28 of the Implementing Order No. 52/89.*I DR Series.* 140 (21-06-1989). P. 2403-10.

The change of ESTGA's structure meets legal requirements (the statutory period set for the installation scheme was extended by successive orders of the Rector of UA) and the consequent growth and complexity of the school itself. The change in ESTGA's structure is evident when comparing certain elements introduction of new and elimination of other from the first to the second phase and the changes in the functions/competences of certain departments that are kept in both phases.

Organizational processes

Every organic-functional area develops activities to accomplish the organization's objectives. We always have to remember that although each organic-functional area has characteristic and specific processes and activities, it should also be taken into consideration that the process is cross-sectional and transversal, i.e. it can "go through" the organization's functional structure, linking different sectors, and resorting to activities of the different sectors, assuming countless interactions.

The knowledge as to processes and activities is fundamental for this study because, to have effective information management, it is essential

> (…) a) "determining what records should be created in each business process, and what information needs to be included in the records; b) deciding in what form and structure records should be created and captured, and the technologies to be use; c) determining what metadata should be created with the record and through records processes and how that metadata will be persistently linked and managed,; d) determining requirements for retrieving, using and transmitting records between business processes and other users and how long they need to be kept to satisfy those requirements (…) (ISO 15489-1: 2004: 6).

A process can be regulated and defined by a procedure that consists of either a specific way to describe an activity or process, or the document itself formally describing the tasks to achieve the final goals of a particular process. With the quality standards the term "documented procedures" is reinforced, once it implies procedures of the organization's key processes should be registered and formalized, so that they are known by everyone.

When decision-makers, have information as to the external environment and internal organizational characteristics, they are holding the basis for an organization's

management and strategic planning. These are the grounds for the importance of knowing the informational circuits of the organization's activities which produce information. Thus, so that the interpretation and analysis are simpler, we proceeded to its graphical representation, through the use of flowcharts, indicating the participants and the documents produced. This technique of organizational process modelling for the organization's knowledge and description is critical, in particular, for the analysis and design of new processes because it helps to identify aspects that have to be redefined, and also works as an excellent means of discussion, control and distribution of organizational knowledge.

These processes result in a series of logically interrelated activities, which, when executed, produce expected results, and aim to meet the needs and expectations of customers. Knowing these circuits allows us to understand the information generated within ESTGA's activities in order to achieve its objectives and fulfil its mission.

Our initial focus was on activities more directly related to the Administrative Secretariat because it was, according to the guidelines of the Active and Permanent Information System Model, the "pilot sector" chosen and it was the epicentre of ESTGA's operations. Starting from the analysis of the functions of the Administrative Secretariat, we studied and represented its tasks and how they are developed, aiming at evaluating how they work. By detection of some anomalies, some changes that streamline information management and how the organization works have been introduced, so that its goals more easily achieved.

To efficiently and effectively promote information management requires thorough analysis, transversal to the entire organization, in order to implement a management system for the documentation/information, disciplining, in an integrated and continuous way, the entire process of production/reception, management and conservation/deletion of information produced/collected, irrespective of the materials.

Conclusions

The importance of information requires organizations to look at its management as an investment in their success, because it is a tactical resource and its management a strategic tool. The context in which ESTGA operates requires flexibility and modernization of its organizational structure, unconditional commitment to information management and the improvement of its information system. This must

be assumed as a strategic approach that helps to promote and expand the horizons in terms of opportunities, once it will allow the detection of and defence from threats coming from the external environment. This way, it can achieve a new balance in its functioning and present itself as a modern and competitive organization.

In conclusion, we highlight some main ideas arising from the study, in order to discipline the documental and information management:

- re-establishing some circuits, particularly those regarding sent and received correspondence, with particular emphasis on the control of outgoing and incoming (or all correspondence received, for example, is registered).This, because it is the majority of the documents produced/collected in ESTGA's activities;
- eradicating the information division according to the technology and media used, and, instead it should receive the same treatment (information is organized according to the technology used, for example: email, fax, etc.);
- numbering the official correspondence dispatched (including emails);
- adopting a workflow system to rationalise tasks, as it enables the automation of processes, according to a defined set of rules, allowing them to be transmitted from one post to another according to certain rules (quick distribution and guidelines exchange are examples of the advantages of this tool);
- investing in technological platforms and electronic documents (including the standardization of document formats and their conversion (if they do not already exist) in electronic form, as well as investing in the digitization and distribution of the documentation by the target users, resorting to digital certification;
- controlling the informational production throughout the whole information lifecycle and creating meta-information;
- developing a classification that allows to discipline and sort the documentation at the time of production (development of the classification already used in correspondence and its extension to information as a whole), in communication with the UA;
- adopting an integrated information management system that helps, for example, to streamline processes that require a constant information exchange, between the School and the University, keeping in mind the

organization's specificities, supported by information and communication technology use.

Given that the information management program, Docushare, is being implemented in three "pilot departments" and the goal is to extend it to the other units in UA, this will meet the need of simplifying and streamlining information management. This is a solution that is being developed and improved, to meet the organization's specific needs.

However, this solution is not yet articulated with documental masses that have been produced and accumulated in UA's existence, as well as in its departments/ autonomous sections, or the needs inherent to the information management in the downstream the end of procedural phases. This situation should also be analysed to guarantee a solution.

For this solution to be successful, it is important that its implementation is accompanied by a set of measures, among which:

- The supervision of services that produce information and the promotion of awareness raising/training for them to understand the importance and added value that may result from the introduction of new procedures and technologies;
- The creation of a regulation that establishes the procedures for the transfer of documents from producing sectors;
- The definition of the criteria and the establishment of a matrix for the selection, evaluation and elimination, which should be developed with UA.

This should be duly supported by an interdisciplinary team with the director's support (we consider that the task force for the Information, Evaluation, Accreditation and Quality, an interdisciplinary group with training in Information Science, Computer Science, Law, Quality Management).

An organization, especially in higher education, must have certain fundamental services, such as a Library and an Archive. These entities produce/ receive and process information (active and enhancer resource) that, when properly valued, contributes to the effectiveness of the whole information system, with high levels of competitiveness in pursuit of organizational goals. Moreover, they are grounded on the organization itself and the respective Information

System. This valorisation should be underpinned by a set of transformations that should be considered, namely:

- Determining and preparing a physical space for the Archive (with the needed conditions in terms of environment/materials);
- The purchase of shelves and more appropriate installation units for conservation and storage of documentation;
- The creation of a space for the permanent installation of the library, with all the indispensable means for its functioning;
- Hiring an information manager with a degree in Information Science.

The analysis unveiled a lack of autonomy of the ESTGA towards the UA. There are specific situations in which this condition causes time loss and delays for certain procedures. Greater autonomy for ESTGA without having to be dependent on its "mother" in many aspects would mean a gain for all parties, because it decreases the circuits and number of participants.

This claim for ESTGA's greater autonomy for increases its responsibility to users and to UA and requires a clear definition of the responsibilities of various departments and the functions of several employees, so that they can be held responsible for their actions as actors in an info-communicational process.

Bearing in mind the challenges faced by organizations in the Information Society, this is an essential tool for solving some of the organization's problems, for strategy formulation and for decision-making. Therefore, it should be used to support processes and decisions and improve organizational performance. This is where we set our position as supporters of a scientific-informational paradigm that puts a practice that lasted for centuries aside, in which the information was essentially memory. But we are not happy with this vision and the times we live in reinforce this belief, because it is critical to transform information into knowledge, sustaining ESTGA's life, growth and development.

Information is the result of every human activity and the ability of man to produce and use it, in any form, made its diffusion and continuity over time possible. That is what we aim for ESTGA so that it becomes a reference institution in the Portuguese higher education system.

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"New Public Management" and Public Service: Exploratory Study with Contributions for the Information and Knowledge Management in the Town Hall of Viseu

Sofia Vasques
Maria Manuel Borges
M. Cristina V. de Freitas

This study relates to the area of Knowledge Management viewed as a process aimed at the creation, storage, dissemination and use of knowledge, in order to integrate people, systems, technologies and sources of internal and external Knowledge, aligning all these aspects with the organization's goals.

According to Nonaka and Takeuchi (1995), Knowledge Management predicts the existence of four types of knowledge conversion (socialization, externalization, combination and internalization), which are essential for the success of its implementation in the organizational context.

Knowledge Management main objectives are usually related to the following actions: promote a positive environment where the creation, the transfer and the use of knowledge are valued; develop knowledge repositories; improve access to the Information and Knowledge.

In the past, the Knowledge Management approach was more evident in private companies context, but nowadays it has been a constant concern of public institutions, awake to the administrative modernization and citizen satisfaction – viewed in the perspective of customers and not only of users. This point of view has changed priorities, approaches and administrative policies. Citizens, in their turn, are

more aware of their rights in demanding efficacy, efficiency and transparency, what matches with the concept of Quality in the public services.

This study is placed into this context of paradigm shift. Its intent is to be a contribute to research in the KM area at the public organizations context, as well as to study and propose the implementation of its principles and fundamentals in the Town Hall of Viseu. Thus, we intend to analyze the impact of the practices of administrative modernization and the use of Information and Communication Technologies (ICT) in the institution, and present proposals that integrate and leverage existing tools. Such proposals are intended as a starting point for a new approach to Information Management and Knowledge in the Town Hall of Viseu.

The finding that transforms the volume of information produced in Knowledge is one of the challenges that organizations require, that access to Knowledge by the managers is one of the assumptions of knowledge management and that the records management can be considered a process of organising Information and Knowledge leads us to propose, for the organization under study: (i) the conception of a corporate portal integrating several identified collaboration tools which allows an easy sharing of Information/Knowledge to all stakeholders; (ii) the creation of a mission unit devoted to the management of the current and semi-current records and, consistently with this, the development of a preparatory instrument that promotes direct access to Information and indirect to Knowledge – a pilot filing plan designed for the records classification and management.

Noted that, structurally, this work is divided into three parts. The first part materializes the theoretical and scientific framework of Knowledge Management. Presents the literature review conducted, emphasizing the implicit concepts, objectives, relevance and support systems of the Knowledge Management. In the second part are referred some underlying elements ongoing administrative modernization in recent decades, and highlighted examples of the applicability of the fundamentals of knowledge management in public organizations. The third and last part presents the case study in the Town Hall of Viseu, which begins with the characterization of the organization in question and ends with proposals which, we hope, bring a positive change in the organizational culture, and contribute to the creation, sharing, easy and rapid access of Information and Knowledge.

Knowledge management fundamentals

The literature review has shown that among the authors that reflect on the subject, a large part begins by setting out the concepts of Data, Information and Knowledge in a stratified manner, referring to the analysis of data (for example tables, graphs and reports) can give rise to information that, in turn, when properly applied, becomes Knowledge. Knowledge is presented as something more than information, because it involves the understanding gained through experience and learning (Martins, 2010, 17).

In this line, Almeida (2007) states that data are facts, describe events, but do not interpret them. They are transformed into information when associated with something and contextualized. Knowledge occurs when we understand the standardization relationship between data and information, as well as their implications.

The same perspective is given to us by Sarmento & Correia (2002), which describe data as records, which become Information when contextualized and interpreted. In turn, the association between Data and Information is likely to generate Knowledge. Although data, intrinsically, don't have meaning or interpretation, are the bases for creating information. The combination and organization of certain Data allow obtaining information that becomes knowledge when imbued with interpretation, reflection and synthesis (Pinheiro, 2007, 61).

Cong & Pandya (2003, 26) refer that concepts of Data, Information and Knowledge are commonly confused, despite having different meanings. Data is understood as mere facts, that only gain value when they are processed and, when that happens, they become Information. Knowledge is understood as relevant information with meaning, which results of comparisons, and of identifying consequences and connections. Data and Information are differentiated by the type of organization, and Information and Knowledge are distinguished by the level of interpretation. It should be noted that these authors add a fourth element: Wisdom, which is the consequence of the accumulated knowledge. Thus, a continuous process between data, in the base, and Wisdom, in the top of the pyramid, is established.

Other concepts that are important to discuss, because they are operationalized in this work, are Document Management, Information Management and Knowledge Management. Document Management is understood as the execution of certain tasks that cover all stages of the life cycle of documents, with the objective of efficiency

and effectiveness in the creation, evaluation, acquisition, organization, preservation, access, and file communication (Portugal, 1997).

For its part, Information Management is presented as a set of operations which aims, at a first stage, at the recognition of the needs of the organization in information for, in a later stage to proceed to the collection, organization, custody and distribution, in order to support decision making and the development of routine activities.

Thus, Document Management relates to carrying out certain tasks, aiming the organization, preservation, communication, evaluation, selection and disposal of documents, and Information Management with diagnostic needs of information and with storage and access to information produced and received by the organization.

Choo (2003) meant by Information Management "management of a network of processes that acquire, create, organize, distribute, and use information" (Choo, 2003, 20). The author states that its goal is to transform information into knowledge, including processes, resources and technologies, and makes an interesting analogy with the human body, stating that the goal of Information Management is to create procedures that function as the circulatory system, by selecting and disseminating important information, and as the nervous system by summarizing the information that is introduced, transforming it into value for the organization (Choo, 2003, 326).

Knowledge Management, on the other hand, aims at creating, acquiring, sharing and using knowledge assets, to assist in decision making, in the creation of ideas and solving the problems of the organization, representing, therefore, a step ahead, in the processes and institutional goals.

The importance of Knowledge Management

Initially, it should be noted that the concept of knowledge is inseparable from author Michael Polanyi (1881-1976), outstanding figure in the area and one of the most relevant theoretical references in the development of the concept.

In the work *The Tacit Dimension* (Polanyi, 1966), the author mentions the importance of tacit Knowledge, that is, the kind of Knowledge we possess but cannot explain, the idea expressed in the emblematic phrase *we know more than we can tell* (Polanyi, 1966 4). Polanyi (1966) was the first researcher to discuss, develop and realize the critical importance of this type of knowledge, which he described as personal and of difficult communication, as opposed to explicit Knowledge, which is systematic and can be formalized in texts, drawings, databases or publications.

Influenced by Polanyi, Nonaka & Takeuchi recognize, ultimately, the difference between tacit and explicit knowledge, stressing the importance of their management, as seen in the book *The Knowledge Creating Company* (Nonaka & Takeuchi, 1995).

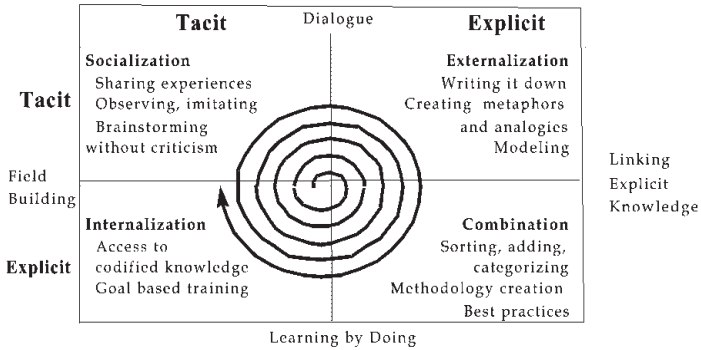
According to the authors, both definitions of Knowledge are complementary. While explicit knowledge can be transmitted in a systematic and formal language, contained in manuals and standards, tacit Knowledge is what the individual has, not even being aware that holds it. It is obtained by experience, and communicated indirectly in metaphors and analogies.

Nonaka & Takeuchi (1995,15) assert that the creation of organizational knowledge happens in the conversion of tacit knowledge into explicit and from explicit into tacit, and identify the protagonists of this process, arguing that there should be a sector responsible for its design, giving all employees a role because Knowledge is a product resulting from the interaction between everyone. They identify the first-line workers, who care about the details of certain products, markets and technologies; top managers, who produce guiding instruments; and middle managers who synthesize the tacit Knowledge, from these two groups, transforming it into explicit Knowledge and incorporating it into new products and technologies.

Thus, the creation of organizational knowledge is the result of the conversion of tacit knowledge into explicit and vice versa, in a spiraling process (Figure 1), which involves both epistemological dimension (which requires four possible modes of conversion between the two types of Knowledge: socialization, externalization, combination and internalization) as the ontological dimension (which provides four levels of agents Knowledge creators: individual, group, organization and inter organizational level).

Nonaka & Takeuchi developed the spiral process – Socialization, Externalization, Combination and Internalization (SECI) – to explain the creation of knowledge through the four forms of conversion between tacit and explicit knowledge (Martins, 2010, 41-43): (i) Socialization (from tacit knowledge to tacit knowledge), assumes the acquisition of knowledge through experience; (ii) Externalization (from tacit knowledge to explicit knowledge) where knowledge can be shared (through reflection or dialogue) by other individuals, generating new knowledge; (iii) combination (from explicit knowledge to explicit knowledge), which happens when explicit knowledge is processed to be distributed by other individuals; (iv) internalization (from explicit knowledge to tacit knowledge), happens when explicit knowledge is distributed to all

members of an organization, becoming tacit knowledge, which can start a new spiral of knowledge creation.



Within the definition of Knowledge, Choo's perspective (2003, 281) refers that, in addition to tacit and explicit knowledge, also recognizes cultural knowledge as fundamental for organizational cohesion – beliefs and assumptions, conventions and expectations, necessary aspects "to assign value and significance to new information and knowledge" (Choo, 2003, 281).

For the author, the smart organization will be the one that can bring together and manage these three forms of knowledge. It will be a "learning organization" that is intended to achieve the objectives in a competitive and changing environment, adjusting their behavior to self-knowledge and perception of the universe in which it operates.

Mentzas, Apostolou, Abecker & Young (2003) report that in the current knowledge economy most organizations depend on the development, use and distribution of skills based on knowledge itself, to maintain their value and competitiveness. Increasingly, organizations need to develop strategies, processes and tools for the creation, transfer and development of what has been regarded as the primary strategic resource of the future. The challenge is to find solutions that help organizations to develop, manage and benefit from the huge potential of their knowledge, to create new instruments and measures for their reinvention and innovation, in order to stand out in the context.

In this sense, they consider that both explicit knowledge and tacit knowledge are important and bring value to the organization. It is the result of the conversion of tacit knowledge into explicit and explicit knowledge into tacit that gives rise to creativity and innovation in the organization.

Drucker (1993) also emphasizes the knowledge, presenting it as the basic economic resource of the organizations, leaving the background traditional resources (labor, capital and natural resources).

For the author, in the "Knowledge Society", value is based on innovation and productivity, and the major social groups are "knowledge workers", "knowledge professionals" and "knowledge employees." Knowledge is thus, according to the author, the new basis of competition in this society.

Davenport & Prusak (1998) argue that high interest for the area of knowledge is due to several factors, including the constant change, competitiveness, consumer demand, which leads organizations to seek the advantage that will allow them to excel.

Martins (2010) states that success is possible in a "learning organization", the one that uses the knowledge of all employees and share in the remaining organization. And the process of knowledge transfer is revealed crucial to acquire competitive advantage.

This recognition of the importance of knowledge for innovation and organizational change, shared by different authors, will be the basis of the projects and initiatives of Knowledge Management in growth since the early nineties of the last century.

Regarding the evolution of the area, Bustelo Ruesta Amarilla & Iglesias (2001) state that the concept of Knowledge Management is not new. The foundations of this discipline were addressed for the first time, in the late nineteenth century by economist Alfred Marshall. However, the development of this type of management in organizations becomes a reality only with technological innovation and Internet.

However, according to Silva (2002), was in the eighties that the relevance given to the study of knowledge management intensified, in part thanks to the advent of the concept of "Knowledge Society" and related approaches to the management strategic and organizational learning.

Indeed, the gradual transformation of the society into a "Knowledge Society" poses new challenges and the need to ensure continuous improvement based on innovation into the organizations. Transformations and technological innovations are forcing organizations to operate rapid changes in their structures, to rethink business strategies, forms of management and network relationships to remain competitive and tailored to the characteristics of this new society.

Within this study, a literature survey on knowledge management has shown the existence of different views and approaches of authors of different nationalities, vocations or educational backgrounds that, in general, highlight the increasing importance of knowledge within organizations. According to their statements, knowledge management presents itself as an asset for organizations.

Terra (2011), for example, in line with the authors previously referenced, mentions that the proactive management of knowledge plays a key role in the competitiveness of firms and countries themselves, which is a different perspective from that which was practiced in the past, based on factors such as location, accessibility of hand labor, the existence of natural resources and the availability of financial capital.

According to the author, knowledge management has a universal character (applies to any organization) and promotes active participation, communication management, the change in processes, structures, information systems and individual and collective incentive. Thus, knowledge management can be an asset for organizations, which could increase the ability to generate, disseminate and store Knowledge (Terra, 2011).

Rossetti, Pacheco, Salles, Garcia & Santos (2008) also stress the importance of knowledge management and argue that the changes produced in the "Knowledge Society" directly affect organizations, forcing them to rethink the structures, business strategies, forms of management and relationship networks. According to the authors, in the organizational project is crucial the role of individuals and technology, presenting organizations as socio-technical systems, in which human capital becomes increasingly more valued.

Pérez-Montoro Gutiérrez (2003) alert to the fact that we are faced with the globalization of markets, a scenario in which companies find themselves forced to create new political alliance and organizational culture to adapt to this new competitive environment. Thus, intangible assets are presented as an added value, that can ensure the proper functioning and firms survival in a globalized market.

It is in this economic context that, according to the author, Knowledge Management is a responsible discipline, among others, for the design and implementation of a system designed to capture and share, systematically, the knowledge of an organization in order to be converted to a value for that same organization. In a general way, Knowledge becomes a value to the organization when it contributes to the pursuit of goals.

Mentzas, Apostolou, Abecker & Young (2003) state that Knowledge Management can be regarded as a new discipline that aims at enabling individuals, teams and organizations, collectively and systematically, to create, share and apply knowledge assets in order to achieve efficiency, agility, competence and organizational innovation. For the authors, knowledge management is the key to innovation, productivity and growth.

Anyway, it should be pointed out that the opinions about Knowledge Management are not peaceful or generalized. Bustelo-Ruesta & Amarilla Iglesias (2001) indicate that there are some controversy, different interpretations and definitions, and commercial use around Knowledge Management, which led same authors to call this type of management a contradiction, a fashion that does not bring anything really new. Pollard (2003) reflects on the theme and presents a critical approach to Knowledge Management. According to the author, it was expected that Knowledge Management was able to improve, among others, growth and innovation in organizations, productivity and customer relationships, but, although the concept is good and expectations are high, its practical application somehow failed. For the author, the reason for this failure was the great and unrealistic expectations, that organizational human behavior could be changed in a positive way by convincing people of the relevance of capturing, sharing and Knowledge archive. For Pollard (2003), Knowledge Management has not yet proved to be a critical element or a differentiating key, regarding market knowledge, business and the needs of customers and employees and has not shown any competitive advantage for organizations that invested in it.

However, there is no unanimity, because there are authors who introduce knowledge management as a key element in the competitiveness of organizations. Almeida (2007, 50), for example, states that knowledge management offers advantages of differentiation arising from intangible capital, due to the creativity, instinct and agility.

Knowledge management is in line with the current society, most universal and interactive, and is characterized by privileging the knowledge, creativity and skills of employees, important features to achieve competitive advantage. Knowledge management should allow the creation of expertise and talent.

Almeida (2007, 60) emphasizes the importance of organizations to use knowledge as a strategic asset and competitive advantage. It is up to managers to recognize the unique skills and resources, promoting new ideas as well as creativity,

talent and emotional intelligence. This process is also critical to proper use of ICT, to preserve Knowledge, distribute knowledge and experiences, and incorporate networked organizations where knowledge is shared and improved.

Pina (2010) identifies in the literature related to knowledge management benefits that the practice can bring to the organization. The author relates the three elements of change on which each benefit of Knowledge Management is based: Knowledge; decision making; and executing tasks.

From the standpoint of the employees, the benefits of knowledge management are reflected in the knowledge sharing, in the reward process (financial or not), and in the recognition of the organization, in status.

In general, the benefits that can accrue from its practice are: increased competitiveness; efficiency in decision making; improving the response to the client; worker motivation; improving the efficiency of the employees, operations, services and products; innovation.

Another perspective is given to us by Cong & Pandya (2003, 27) who reported that one of the goals of knowledge management is to realize what should be shared, how, and with whom. Thus, the sharing of knowledge gains importance when it is used and reused. Knowledge Management produces value when there is an environment of confidence and motivation that enables the sharing and use of knowledge, when there are processes to locate and create and when there is technology that allows your storage location and sharing, in order to achieve the goals of a particular organization.

As demonstrated, despite some opposing, in general the consulted authors emphasize the importance of knowledge management for innovation and organizational change, identifying three of its key elements: individuals, processes and technology.

With respect to the latter, we consider important the study of Almeida (2007, 120, 217) that identifies and develops the main supporting knowledge creation tools, summarized in Table 1.

Davenport & Prusak (1998) also reflect on the Knowledge Management support tools and highlight Knowledge maps that locate but do not contain it. According to the authors, to develop a tool like this, first it is necessary to find the relevant knowledge of the organization, then create a framework that refers to the location. The maps indicate people, documents or databases. Its main goal is to show employees of the organization how to access the knowledge sources they need.

Table 1 – Knowledge management support tools

Tools	Description
"Information and Communication Systems"	Coaching (the aim is learning, training and optimizing performance through mechanisms of motivation, evaluation and transmission of knowledge); Mentoring (which enables capture of the values of individuals and the transmission of a corporate culture); Systems that enable creativity (for example brainstorming) and the use of Mind Maps, particularly useful in self-analysis, in meetings planning or work in project management, and problem analysis.
"Learning Systems and Benchmarking"	The aim is to learn in an open system, focusing on techniques supported by technologies and the observation of good examples.
"Systems development of capabilities and skills"	Development of skills such as leadership, talent and emotional intelligence.
"Information Systems and Knowledge Management Systems"; " Communication and Information Technologies Tools to support Knowledge Management"	Internet (universal dimension); Intranet (access restricted to a particular organization); extranet (support to customers, suppliers and employees); groupware (which emphasizes group work); workflow (allows automation of processes and information); repository (allows Knowledge storage and compilation of information); Knowledge maps (allow to represent knowledge that is deemed critical to achieving the strategic objectives of the organization).
"Security Systems and Knowledge Protection "	Their main purpose is to protect the intangible assets of the organization, and fulfilling specific policies relating to industrial property rights and intellectual property laws.
"Socialization of Knowledge Systems" and "Virtual Communities"	Portals; communities related to a particular profession; networking platforms; clusters (geographical centralization of organizations united by a particular activity); Knowledge forums (that allow the exchange of best practices).

In this connection, refer to the study of Mentzas, Apostolou, Abecker & Young (2003, 5-8), which recognize two different approaches, namely "product" and "process", and relate how the particularities of each are reflected in knowledge management tools support initiatives.

Thus, the collaborative software used within the Knowledge Management initiatives that are based on the "process" aimed at creating virtual and shared workplaces where people with the same goal can interact, share experiences and knowledge. An infrastructure to exchange messages and information in the form of electronic mail services, collaboration features, such as discussion groups, shared folders or databases and calendar functions and agenda would be a good example. The authors also refer, in this context, document management and workflow systems, which present numerous advantages in processes that require several people to treat a set of documents.

Moreover, the software that aims at supporting the approach of Knowledge as a "product" provides tools for knowledge storage from different sources, such as Internet and intranet sites, file servers, databases and information systems essential to find information relevant to the performance of certain tasks. Also according to the authors, systems based on knowledge which seek to replace human reasoning with Artificial Intelligence are typical of the Knowledge Management software focused on the "product". These systems reflect this approach because their role is to replace (at least partially) human beings and human knowledge in performing specific tasks.

In this first point we wanted to make clear the distinction between the concepts of Data, Information and Knowledge, and between the three levels of management (Document, Information and Knowledge), an explanation needed to understand the advantage of the knowledge management in organizations.

We sought to expose the contributions of different authors for the characterization of Knowledge Management, cite Knowledge creation model proposed by Nonaka & Takeuchi, fundamental process that should be the basis for projects of Knowledge Management, and mention the different systems support. Note that this is the theoretical basis of the proposals that will be developed in the third part of this paper.

The applicability of knowledge management fundamentals in public institutions in view of the principles of the *new public management*

The Public Administration Reform, initiated in the late seventies and early eighties, aimed to build a more efficient and effective public administration, concerned with the improvement of services and the proximity to citizens.

It was probably the failure of the "Welfare State" (which aimed to resolve, in part, the economic problems resulting from World War II), in the early seventies, that was in the basis of the administrative reform, due to the economic recession caused by the oil crisis, and the increase in public spending (Madureira & Rodrigues, 2006).

Administrative reforms, accentuated in the eighties and nineties, were based on the concept that public organizations should be managed identically to private companies, having as main objectives the decentralization, deregulation and delegation. It is in this precise context that the "New Public Management" arises, bringing new concepts and management tools, advocating the replacement of public management by private management, decentralization, financial control, fiscal coordination and giving the importance to consumer services (Madureira & Rodrigues, 2006).

The public sector reforms were characterized, fundamentally, by incorporating the methods used in the private sector with the introduction of competitive factors, by emphasising on economic rationality and by evaluating the results (Mendes, 2001).

With the "New Public Management" is born the concept of "customer" of the public service, and this new concept commands the decisions and projects in the area. This model denotes the effort made by governments from the eighties onwards in order to modernize and make the public sector more efficient. This concept is based on the thesis that a management oriented for citizen satisfaction contributes to a greater cost efficiency by governments.

The ideas and innovative tools promoted by the "New Public Management", in view of the application of private law contracts to deliver public services, began to be implemented in the United Kingdom, in the early eighties, but quickly have spread to another countries like Australia, New Zealand, Finland, Sweden, France and Germany.

In Portugal, although the context is different from that which characterizes most countries of the "Organization for Economic Co-operation and Development"

(OECD), was taken the same reform measures. Note that it is since the eighties that we can effectively speak in Portuguese public administration reform. This aimed at improving liaison between the administration and citizens, reducing administrative procedures and promoting the education of public workers (Araújo, & Cândido, 2003). In recent years there has been a notable concern with: quality of services provided to citizens; orientation to results; introduction of new instruments of human resource management, as the performance evaluation and mobility; qualification of workers. However, the application of these principles is complex, in part due to very basic differences between the public and private sector: the gap between business administration and public management; the distinction between consumer and citizen; the fact that the decentralization, allied to the need for financial control and budgetary coordination, brings problems to the implementation of public policies; and the difficulty in assessing and measuring the efficiency and effectiveness of public services (Rocha, 2000).

The *New Public Management* seek, ultimately, the accountability of public officers, so that the satisfaction of the needs of citizens is assured, and scrupulosity on the management of "public affairs".

According to Giacomo (2005), ICT should be included in the practices of the New Public Management, given its importance to organizations and tasks execution.

Despite its relevance, the administrative reforms implementation have not been peaceful, and denotes that the proposed measures were not and are not consensual. Indeed, despite the public administration reform emphasize the importance of adopting criteria of the private management in public administration, there were critical voices that have accentuated the gap between the two sectors. Obstacles in identifying the costs of activities and evaluation results based on objective criteria are pointed out, in addition to referring that the management new paradigms are not the solution to the problems of provision of essential public services.

The texts consulted revealed that the differences between the public and private sectors are accentuated in the following points: goals (public interest and comply with certain standards for public service, and profit and results for the private); limitations, legal content, imposed on the public sector; political factor that is present in public administration; differences in power relations in organizational models and source of funds; competition inherent in the private sector.

However, according to Mendes (2001), in spite of the differences between the two sectors, it is possible to adopt similar management models, and the proof is the

fact that public administration is managed based on business plans, management reports processes and performance evaluation, and obtain financing depending on the results.

Regarding the portuguese reality, Mendes (2001) states that are established in Public Administration, management principles that secure goals of efficiency, effectiveness and economy. The author presents criteria that should underpin the administration reform: (i) decentralization , with a view to achieving the goals previously outlined; (ii) highlight the role of leaders, providing conditions for running his office, highlighting their assessment and accountability; (iii) motivate employees to perform well, and increased autonomy; (iv) practice a participatory management at all levels of the decision, allowing the identification of workers with institutional and functional goals; (v) promote a cross-dialogue between leaders, managers and employees; (vi) implement performance assessment based on the objectives and results, not forgetting the compensation, supplements and proper training .

Should be noted that we consider that the new public administration paradigm creates the conditions for the implementation of knowledge management projects in public organizations, some of which we refer in the following section.

Knowledge Management in the Public Sector

The literature review revealed that are scarce, mainly in Portugal, the studies on knowledge management in public organizations. With regard to other contexts, we located initiatives that deserve some mention.

Pérez-Montoro Gutiérrez (2003) refers to a study in which he participated, promoted by the United Nations (UN) and entitled *Latin-American Government Network on Information and Knowledge Systems* (LAGNIKS).

This project is an attempt to improve governance in disadvantaged areas, making use of an initiative of the Knowledge Management based, among other factors, the features and benefits that accrue through the documentary treatment and digital information.

In another study, Fresneda, Gonçalves, Pope & Fonseca (2009) present some data about the diagnosis of Knowledge Management in Brazilian public organizations, using the method called "Organizational Knowledge Assessment" (OKA), a free tool developed by the World Bank. One purpose of this study is to stimulate organizations to not only apply OKA method, as well as develop a plan Knowledge Management,

enabling them to identify, store, create, use and share knowledge. It is intended, therefore, to evaluate the ability of organizations to broaden their intellectual assets through the combination of three essential elements to generate competitive advantage and achieve organizational goals: people, processes and systems. The authors conclude that the use of OKA tool can enhance collaboration between agencies and between Brazilian and international institutions (Fresneda, Gonçalves, Pope & Fonseca, 2009, 12). About Knowledge Management support tools, Amante & Segurado (2010) address the relation between this and the repositories. The authors point out the importance that they take in knowledge management in universities, revealing itself as an important system information for the custody, preservation and diffusion of institutional intellectual output. According to the authors, the practice of knowledge management in educational institutions concerned with improving the processes of creation (research), transfer (teachers), learning (students) and use of knowledge. The institutional repository is a tool that fits in the initiatives of Open Access to Knowledge . It is an information system that allows storage, preservation and dissemination of intellectual content produced by the organization. Improves the scientific communication system and facilitates the access to scientific publications via Internet. The reduction of barriers to the free flow of information is particularly relevant in the context of a society that intends to be Knowledge (2010, 3). Also in this context, we highlight a paper published in Brazil that reveals the importance of Information Technology for Knowledge Management. This is an interesting tool called Personal Brain, created thinking in its application in public institutions, including the secretariats of Town Halls. This instrument aims at mapping the information, organizing them with mechanisms similar to those that humans use to structure their ideas, allowing the establishment of links between them (Araújo & Candido, 2003, 41). The authors of the proposal argue that Personal Brain may be crucial to support decision-making.

According to Sicsú and Benz (2010), Public Administration shall: be alert to changes in society and promote, among others, the creation of a "collective intelligence", the improvement of performance and social and human conditions, and the sustainable development; aim for continuous improvement; ensure the provision of efficient and quality services, optimizing the resources available. In this sense, knowledge management projects are particularly interesting, considering that they can bring benefits: developing, identifying, capturing, sharing and disseminating Information; contributing to the optimization of work systems and public resources.

Therefore, it is believed that the Knowledge Management initiatives can create ideal conditions for obtaining efficiency of Public Administration, the equivalent, according to the authors cited, to a competitive advantage for private companies.

According to Fresneda, Gonçalves, Papa and Fonseca (2009) the main benefits of the implementation of Knowledge Management in public organizations are the improvement of the quality and efficiency of internal procedures, the identification and sharing of "best practices" and, consequently, the creation of positive results in citizen service.

These authors identify five issues related to lack of Knowledge Management in organizations (2009, p. 4): (i) the existence of a large volume of strategic information that is not shared or analyzed, and therefore is not taken into account in decision making process; (ii) the annulment of individual and collective skills; (iii) the absence of cooperation; (iv) the fact of not being exploited the group work, virtual and collaborative, and (v) the fact of not being promoted collective learning, which leads into a barrier to innovation and creation.

For the mentioned authors, the implementation of measures of Knowledge Management in the public sector meets the public expectations of both workers and citizens, because these promote transparency in public service (through access to Information and to the ability of intervention), quality of services and cost reduction, as well as the development of a culture of knowledge sharing (2009, p. 7).

Cong and Pandya (2003) relate that the new economy has brought challenges and opportunities both for the private and public sector. Public administration must seize these opportunities by adopting and adapting management tools and working methods of the private sector. In this context, Knowledge Management can and should be explored by the public sector.

These authors mention that the key components of Knowledge Management are: (i) individuals – should be encouraged to the sharing and use of Knowledge; (ii) processes – to identify, create, capture, share and use Knowledge; (iii) technology – to store and make accessible the knowledge, and to promote remote working. They state that organizations that introduce the Knowledge Management processes get higher productivity levels, which in the public sector context translates into reduced cost procedures and improvement in service to the public (Cong, & Pandya, 2003, p. 30).

Note that despite the theoretical and practical proven benefits of Knowledge Management, in the last twenty years, according to the literature consulted for the elaboration of this study, it seems that, in Portugal, the research and implementation

of systems on this area are relatively recent, despite the interest that the academic community has shown in the matter, what can be attested for the growing number of articles, lectures, published works and websites devoted to the topic. It is in these sources that we can find some important conclusions such as Almeida (2007), Sarmento and Correia (2002), Lopes and Morais (2001) and Zimmermann (2010), authors that point to the fact that, culturally, there is no collaborative and sharing of knowledge tradition in Portugal, which leads into a barrier for success of initiatives / projects in this field.

Despite this fact, Portugal is taking important steps on the creation and use of Knowledge Management tools. A good example is its distinction in the 8th Edition of the "United Nations Public Service Awards" (awarded to the "best practices" in public administration), with the first prize in the category "Fostering Knowledge Management in Public Administration", award granted to the "Common Knowledge Network" (RCC), a project of collaboration networks, sponsored by the "Public Services Reform Agency" (AMA). This network, beside the "Inter-ministerial Network for Information Technology and Communication," "Network REAI – Exercise Regime of Industrial Activity" and "Simplex Network", is a project sponsored by the "Public Services Reform Agency" (AMA), whose mission fits into the development, coordination and evaluation of "projects in the areas of modernization and administrative simplification and regulatory management, and electronic delivery of public services". (Table 2).

Must be pointed out that these administrative modernization initiatives, integrated into a government that intends to be electronic, are fundamental to the communication between different actors, allowing the continuous public services quality improvement and government agility.

Although not yet operating at full capacity, especially for reasons related to the lack of collaborative tradition in Portugal and the late access to the implemented tools (Zimmermann, 2010), we consider that these projects are undeniably relevant to take the country towards the Information and Knowledge Society.

Table 2 – Public Services Reform Agency (AMA) projects

AMA Projects	Description
RCC	Network for sharing best practices for modernization, innovation and administrative simplification, whose mission is to promote practices on Central, Regional and Local Administration and on portuguese speaking countries, allowing access, among others, to important information in the areas of modernization and administrative simplification, "interoperability, inclusive government and the distribution of public services".
Simplex Network	Collaborative platform that aims to support the actors of the Simplex program . Aims to contribute to the legislative and administrative simplification, make life easier for citizens, reduce the administrative costs of economic activities and modernize public administration. The Municipal Simplex design presents as an important resource for Knowledge Management in Local Institutions (Zimmermann, 2010, 109).
Inter-ministerial Network for Information Technology and Communication	This network aims to promote collaboration between the different elements involved in projects in ICT. The thematic shared in this network privilege areas of "interoperability, integration, electronic identification, multichannel service systems, workflow and document management systems and safety".
Network REAI – Exercise Regime of Industrial Activity	Its main objective is to clarify the doubts of the various actors involved, the procedures relating to the analysis of industrial licensing and the use of tools available in the "Company Portal".
Public Administration Interoperability Platform (iAP)	Recently recognized in the 2012 edition of CIO Awards. The iAP is a technological structure designed for the provision of electronic services aimed ultimately an improvement in responsiveness to citizen.

Knowledge management in public institutions: case study-town hall of viseu

Organizational context

Portuguese local government aims, ultimately, at satisfying the needs of local communities, having as main responsibilities, defined in the Laws Nº 159/99 of 14.9 and 169/99 of 18.9, amended and republished by Law Nº 5-A/2002 of 11.01, the following: public water supply, sanitation, health, socio-economic development, spatial planning, environment, education, culture and sport.

The Town Hall of Viseu, in addition to pursuing the tasks set out in the legislation above mentioned, intending to create the conditions for an inclusive, competitive and sustainable socio-economic development, has responded to the challenges of the Information Society and administrative modernization, integrating Information and Communication Technologies (ICT), making them accessible to all employees, and participating in programs and projects in this area. These very positives actions, according to our point of view, promote an organizational culture and a transparent, open and non-bureaucratic management, contributing to satisfying citizen needs.

The Town Hall of Viseu has at its disposal tools and initiatives usually related to Knowledge Management [8]: E-Mail, Intranet, Website, Document Management System, and Simplex Project (table 3).

Contributions for the Knowledge Management in the Town Hall of Viseu

The contributions presented result from the lessons learned after the research / literature review in this work, and the characterization and analysis of the organization under study. We concluded that: (i) one of the challenges for the organizations is to turn the volume of Information produced into Knowledge; (ii) for the successful implementation of Knowledge Management it is necessary that the four forms of knowledge conversion be performed; (iii) in a public context, administrative modernization projects, technological development and citizens' needs satisfaction are forcing organizations to include ICT in their structures, although neglecting a

Table 3 – Knowledge management support tools identified in the Town Hall of Viseu

Tools	Description
E-Mail	Tool accessible to all employees of the organization, used in most situations, to participate absences; promotion of training activities, service notes, orders, events; access to the salary, the information and requests between services; communication with citizens.
Intranet	It features eleven large groups of content, including information on the Evaluation System; Applications used; Forms; Financial Management; Legislation; documentation within the Human Resources; Regulations; orders and service notes; dissemination actions and training reports. This tool promotes documents and information sharing although it has not able Information and Knowledge collaboration. There are no discussion boards or a space-sharing by employees. There are redundant Documents and information, whereas they are present in the Institutional Site and are sent via email. The organization of content is not always clear and intuitive and has less enlightening items as "useful information" or "many".
Institutional WebSite	Institutional website that offers the following content, structured and directed to internal and external audiences: Management Forms; Minutes of the Board; Contests; Announcements and Notices; Regulations; Plant location; Financial Information; Information concerning ethical procedures; Town Hall composition; Town Hall Assembly; Information on municipal services; Information, news and announcements of events and projects of social, natural, cultural and sporting.
Document Management System	Application used by all employees of the organization, in particular to respond to records within their tasks and responsibilities. Are processed each year, approximately 400 000 records. Note that does not include key features, such as the integration of the classification plan. Excepting the case of contravention processes, it is not used in this application workflow tool, important in our view to the correct and efficient documents and information processing. Furthermore, the functionality of digital signatures supporting the citizen card Is not used. The indexing and the creation of entities are the responsibility of employees appointed for this task, but there are no criteria or standards, which has caused some embarrassment in locating documents and in duplicate entities.
Simplex Program	The implementation of the Simplex Program follows the technical and administrative modernization underway in the organization process and aims to provide, to the citizen, an expedited, quality, convenient and transparent service.

diagnosis and a preliminary evaluation; (iv) in the case of the studied organization, it is not enough to have technological tools; it is important to integrate and provide them with others that support and promote knowledge management, involving the employees and the administrative staff of the organization.

Thus, it is proposed, as a contribution, the creation of a corporate portal and a filing.

It should be noted that these contributions are intended to demonstrate the difference between managing documents, information and knowledge in a public organization. So, we hope that these contributions serve as a starting point, a model for the effective implementation of Knowledge Management in the Town Hall of Viseu.

Finally, we believe that the contributions of this specific case study that we have conducted, will agree with the arisen theoretical assumptions about Knowledge Management and Knowledge conversion process (Nonaka, & Takeuchi, 1995), described in the first part of this work, by matching the theoretical formulations with the case study.

Corporate Portal

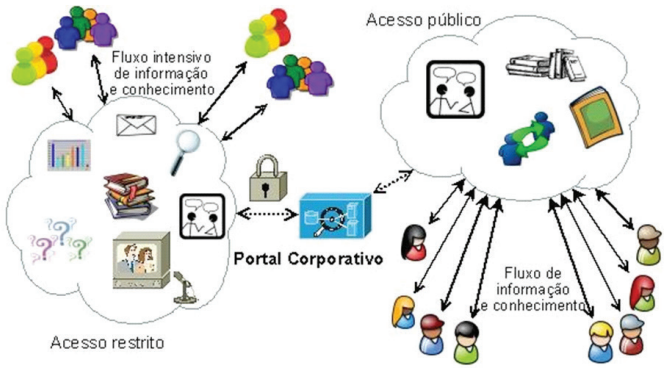
In ICT, it is noted the position of Carvalho (2006) that after the study on intranets, corporate portals and Knowledge Management, warns that consulting firms and software vendors "sell" the concept Management Knowledge, despite the currently tendency to place emphasis on the human factor rather than the technology in knowledge management projects. For the author, these projects should be thought in the long-term and understood as a process of organizational change, involving both the human factor as the technological. Carvalho (2006) shows the contribution of ICT to the conversion process of Knowledge in the following table.

Schons and Costa (2008) report that corporate portals, by integrating network technology, bringing together in a single platform, communication services and access and sharing of information and knowledge, allow users to be able to extract the value of the information, transform it into knowledge and then reuse it, making possible the conversion process.

Socialização	Externalização
Knowledge maps Knowledge sites	Groupware Workflow Systems based on artificial intelligence Knowledge sites
Internalização	**Combinação**
Tools to innovation support	Intranet Business Intelligence Competitive Intelligence Knowledge sites

The corporate portals, by promoting exchange of information between individuals (tacit to tacit), allow socialization of an idea, Information and/or Knowledge (which at first was only in a tacit level, still not verbalized), starting the process of creating knowledge.

The same authors also refer the possibility of coexistence of two different spaces of access in corporate portals: public, available to all Internet users; restricted, accessible to employees and suppliers, "obeying the rules of customization", upon the profile of each one (Figure 2).



Carvalho (2006) mentions that the analysis of some intranets used in Portugal and Brazil shows that these, despite integrating collaborative capabilities, are, in most cases, tools to support Information Management instead to support Knowledge Management as expected, we add. The author states that in the observed organizations, the intranet management is done in an amateur way

and that information professionals do not integrate or manage intranets teams. Anyway, the author concludes that both intranets and portals contribute to the creation of Knowledge and the development of Knowledge Management projects, but it must be taken into account that it's not enough to acquire technologies and complex systems, it's also needed to invest and prepare the human resources of the organization. It is important, for organizations, to understand how to transform Information into Knowledge and Knowledge into action.

Considering this brief exposition on portals and intranets, and after a previous analysis of the tools described above (email, Intranet and Website), specifically with regard to the case of the Town Hall of Viseu, it is clear that a solution able to centralize all the relevant documentation and information, both to internal and external public, and capable to integrate the different work and communication tools, would not only respond positively to the need of creating an interactive space for collaboration and sharing of knowledge, but also to endorse the premises of an effective, efficient and quality Public Administration, focused on the customer: the citizen.

We propose, therefore, the creation of a Corporate Portal that incorporates, in a single platform, services and applications for both public and restricted access (this last upon authentication of users), ensuring security and privacy in accessing the available documentation, information and applications.

This platform would aim to enable information and knowledge sharing, avoiding information redundancy, – something that happens nowadays, due to the Intranet and the Website being running detached – and reducing costs with internal communication, by incorporating communication tools such as e-mail and "instant messaging".

We believe that it is also important to integrate collaborative tools such as forums, information sharing, resources and "best practices" as well as the creation of an information area – for consultation of personal data, salary, vacation, and absence justification – by integrating the functionalities of the citizen card.

The worker, by logging in, would have access to new e-mails, notes and service´s orders, to workflows, calendar, alerts, and to a public folder with essential information about the execution of the tasks assigned.

Moreover, the public access would present general information and important documentation (for residents, tourists, citizens); a space for the suppliers and customers authentication, and the integration of the Town Hall services.

We propose changes that aim at the integration of communication tools and electronic payment systems, on-line order placement, its forwarding to the competent services, and the consultation of the requests processing.

Note that this proposal would only be achievable with the dematerialization and simplification of processes and services, imposed by administrative modernization, a procedure that is not being neglected by the Town Hall of Viseu.

To achieve the Corporate Portal, should be made in advance, a mission unit, composed by elements of the administration, information professionals, specialists in networking technologies and representatives of all departments and services to: (i) identify needs; (ii) analyze other experiences, to choose the best technology solution; (iii) to structure and update the content and (iv) to evaluate and control the portal quality in the areas of access and navigation, personalization, availability and sharing.

In conclusion, the implementation of a Corporate Portal, according to our proposal, should be a continuous process of updating and ongoing maintenance and support, with a proper team, looking to satisfy the users' information needs.

We propose, therefore, that the Portal not only gives access to information, but, above all, it is an interactive and collaborative platform, a virtual meeting point to the workers of the organization. The Corporate Portal would present itself as a repository for documents and information, and as an effective space for interaction and communication in real time, providing the existence of discussions groups and knowledge sharing.

Note that it is proposed the building of a portal with a friendly and intuitive interface, with delivery of appropriate information to the nature and profile of each user. In other words, it will be a place to promote collaboration among workers; information search and use; integration of different organization systems. It will also provide a space for the sharing of resources, documents, relevant organization news and "good practice".

Finally, it must be pointed out that this proposal does not assume any technical specifications, because that is not the aim of the present study. We only intended to propose some emergent changes, making possible the use of the already existing tools in the institution, aiming the Knowledge conversion process, in its classical forms (Nonaka, & Takeuchi, 1995), and pointing at the implementation of Knowledge Management project in the studied organization, involving its various actors.

Table 5 – A partial classification plan for the Town Hall of Viseu

PARTIAL CLASSIFICATION PLAN – TOWN HALL OF VISEU

Level 1 (Function)			Level 2 (Activity)			Level 3 (Action)		
Cod	Class Designation	Content Description	Cod.	Subclass Designation	Content Description	Number Ref.	Series Title	Final destination
16	Licensing	In this class are included the series commonly referred to "Taxes and Licenses". Have three subclasses: economic or leisure activities; allotments; private projects. Refers to the licensing jurisdiction of municipalities, derived from law planning.						
			1601	Economic and Leisure Activities	Economic activities and leisure Licensing			
			1602	Allotments	Allotments operations Licensing			
						160201	Prior Information Processes of Allotment	Final conservation
						160202	Allotment Processes	Final conservation
						160203	Simple Information Processes of Allotment	Final conservation
			1603	Private Projects	Private Projects Licensing			
						160301	Certificates	Final conservation
						160302	Prior Communication Processes	Final conservation
						160303	Parcel Detachment Processes	Final conservation
						160304	Prior Information Construction Processes	Final conservation
						160305	Simple Information Construction Processes	Final conservation
						160306	Use Exemption Processes	Final conservation
						160307	Use License Processes	Final conservation

						160308	Licensing Processes	Final conservation
						160309	Thoroughfare Occupancy Processes	Final conservation
						160310	Petition Processes	Final conservation
						160311	Horizontal Property Processes	Final conservation
						160312	Inspection Processes	Final conservation
						160313	Use Licenses Records	Final conservation
						160314	Private Projects Records	Final conservation

Current and semi-current records management

In the current panorama of administrative modernization, technological development and simplification of the relationship with the citizen, the public institutions have implemented records management systems and programs. As mentioned above, the Town Hall of Viseu did not escape to this context and implemented, in January 2005, a records management system program with priority application in the Licensing and Expedient records series, whose goal was to facilitate the fast, efficient and safe access to information.

In our perspective, this implementation has not taken into consideration previous studies or technical support required. There were detected some gaps in the standardization of procedures and archival methods and practices (arbitrary and subjective), particularly in tasks like indexing, entities creation and documents processing.

Considering these detected gaps in the functioning of the current Records Management System, we propose the creation of a multidisciplinary mission unit, involving representatives of the Administration, various Departments and Services, Computer and Archive Sectors, that commits itself to: (i) identify and analyze the overall needs (through data collection and staff interviews); (ii) identify, analyze and apply electronic records requirements; (iii) analyze other experiences and practices in order to make a more realistic decision; (iv) conciliate the system selection with the

pre-identified goals and user needs; (v) normalise the administrative procedures; (vi) develop a regulation service ; (vii) participate in the creation of an institutional filing plan, and respective manual of procedures, in view of the intellectual and hierarchical organization of records captured by the system; (viii) participate in the development of a records retention and disposal schedule; (ix) introduce the classification scheme in the Document Management System; (x) determine the workflow, according to records/processes; (xi) create a digital preservation plan; (xii) develop a program for training and sensitizing system users and, finally, (xiii) apply evaluation techniques that allow identifying gaps and redefine strategies.

As a starting point for the management of the current records, has been prepared a partial filing plan, which will serve as motto for the continuity of this work.

The elaboration of this filing plan obeyed some phases previously described in the Manual for Records Management, published by *Direção Geral de Arquivos* (Portugal, 1997).

Thus, we surveyed the institution (laws, standards, regulations and its organizational and functional structure), in order to determine its accessory functions and core functions. We also performed a macro-functional analyzes of the institution in order to identify its core activities and tasks. Considering all these analyzes, we fixed the Classes and Subclasses of records (according to the principles of the functional classification), based on the records retention schedule recommended for the Portugal Public Administration (Portugal, DGARQ, 2007).

We notice that for the development of this pilot project we selected the extensive group of records produced by the Department of Planning and Urban Management of the Town Hall of Viseu. Our selection was based in a simple fact: currently, this is the only one that is managed and preserved by the Institutional Archive Sector.

Thus was created a framework that provides three hierarchical archival levels of classification of current and semi-current records (class, subclass and series), with the allocation of the respective classification codes, a brief and general description of contents, and the core information needed in order to decide about records appraisal (it was fixed the disposition date of the identified records series, based on the records retention schedule emanated of the Portugal Public Administration).

Thus, based on the analysis of the core and accessory functions of the institution, we have identified a number of 35 classes, alphabetically sorted and identified by a univocal classification code. We also recognized the records series, belonging to subclasses "Allotments" and "Private Works" (of the "Licensing" Class), and

submitted them to a codification scheme. Note that all the documentation surveyed was produced under the mandate and competences of the Department of Planning and Urban Management (Table 5).

Definitively, as we have noticed before, this contribution fits the previous analyzed theoretical assumptions, whereas the Archive, besides playing an important role as a repository of explicit knowledge may also contribute to the development and implementation of Institutional Knowledge Management Programs. Undoubtedly, the Archive plays a key role in the access and reuse of organizational knowledge, in the interaction of employees, and, consequently, in the decision making process. These are assumptions that are strongly advocated in Knowledge Management field. Moreover, the archival classic functions, such as acquisition, classification, appraisal, description, preservation and conservation, contribute strongly to the process of Knowledge Organization and Information Management, generating products usable by the entire organization.

Finally, we consider that the pilot filing plan, as we explained in the light of this study, can be understood as a Knowledge Map, a tool that allows, efficiently and effectively, knowledge location, despite not containing it.

Conclusions

The literature review prepared for this work confirmed the mainstreaming of Knowledge Management and the increasing of scientific production, in this area, during the last twenty years. It was also notorious the concern of organizations with the development of projects in this area, and the importance of Knowledge and its management to innovation and organizational competitiveness.

Thus, it is in the context of the administrative modernization and Knowledge Management that we intended to produce a brief bibliographic review related to Knowledge Management in public organizations, and performed a case study that allowed to transpose the applicability of the assumptions of this discipline to the reality of a Portuguese public institution, in which we made a preliminary diagnosis. We wanted to make a brief analysis of the reforms to which the public administration was subject to, in the last four decades, and transpose all the theories arisen throughout the study to the reality of a specifically Portuguese's organization. We submitted proposals – the creation of a corporate portal and the creation of a

pilot filing plan to the current and semi-current records management – which, in our opinion, will promote collaboration and sharing of knowledge. These contributions are intended to capture and distribute best internal practices, creating a collective intelligence. The aim is the optimization of available resources and work systems, improving administrative procedures, awareness of employees into Knowledge Management and collaboration, encouraging a creative, innovative, reliable and learning environment. Note that these initiatives must be clearly aligned with the goals and strategies of the organization.

This study allowed us to draw some conclusions: (i) there are three key elements in Knowledge Management: people, processes and technology; (ii) one of the most important challenge to overcome by organizations is to convert all the volume of Information produced in Knowledge; (iii) the successful implementation of knowledge management depends on the ability to convert the four types of knowledge (socialization, externalization, combination and internalization); (iv) the new paradigm of Public Administration brings favourable conditions to the implementation of Knowledge Management projects in public organizations; (v) the administrative modernization projects, technological development and obligation to fulfil citizens needs have forced public organizations to incorporate ICT in their structures, although neglecting a prior diagnosis and evaluation; (vi) the systems should be used in an integrated and collaborative way to match the assumptions and goals of Knowledge Management; (vii) the Town Hall of Viseu has in its hands several ICT tools, but there is a need to integrate and provide them with another tools, in order to support and promote an effective and efficient Knowledge Management, involving both employees and administrators of the Organization.

Regarding future work, it seems essential, in addition to all the proposals above, the development and implementation of evaluation techniques, able to identify gaps and redefine strategies.

Regarding future research and considering visible lack of studies on Knowledge Management in public organizations in Portugal, we think that it would be extremely important that Public Institutions committed themselves in conducting, sponsoring and encouraging studies voted to the development and implementation of Knowledge Management tools. Equally, we are very sure that it would be extremely convenient the development of a survey and an analysis of the ICT tools available to support Knowledge Management in Portuguese local government. Interesting and innovative proposals for joint projects could result from these actions.

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Information and communication in crisis and disaster management: the case of tourism

Vítor Hugo Gonçalves
Fernando Colmenero Ferreira

Unforeseen events, depending on the aggressiveness, size, duration or other situations, are no longer restricted to places where they are being felt, gained another dimension, expanded, in many cases amplified, have assumed a national dimension and even became globalized. With a current capacity of exponential absorption and mass production of information, and given the power that this has on each in an increasingly tight manner, by increasingly sophisticated, effective, timely and efficient methods, coming in various ways, in a larger number of formats and even through the contribution of any citizen who, using a range of multimedia devices, generate content themselves, enlarge the volume of information, turning the decision-making more complex.

In short, we live in an era in which crisis, and the respective information they generate, interest in a way never before seen and, the larger the phenomenon, the greater the amount of information collected, processed and disseminated, and consequently the greater the impact and effect resulting thereof, in the medium and long term.

This chapter provides an integrated and strategic approach, particularly in two ways. First, the synthesis of literature from a wide range of theoretical perspectives (crisis in public relations, communication, knowledge management,

etc.), even proposing an integrated approach, taking a management and strategic planning approach of the theme, examining the major stages in a crisis and the lifecycle of disasters. It is, in fact, truly important to try to integrate these areas, often very distinct, in order to better assist the understanding and further development of knowledge. We will focus particularly in crisis associated with tourist destinations.

After that, the work will advance like it begins, progresses and ends in crisis or disaster, i.e., when prevention and planning do not support and are not up to the action, taking into account the risks to which we are subjected and the vulnerability to which we submit. The preparation for response activities and the response itself will be begun, highlighting here already the importance of communication. The final phase will be the recovery that culminates with the replacement or improvement of the state preceding the crisis or disaster, incorporating the eventual treatment of knowledge and learning resulting from the information generated by those events.

This theme will be further divided into two distinct elements. First, organizational strategic planning to prevent or reduce the chance of crisis inducing further complications, by adopting monitoring and planning. By using predictive techniques quantitative or qualitative as well as brainstorming by the organization, the understanding of the types of risks and possible response strategies can be improved. The second part outlines the steps for mitigation or prevention of pre-disaster to alleviate or prevent a hazardous event and its possible impacts. This information can then assist with prevention through the reduction of exposure to risks, increasing the resilience or improving signal detection to reduce the likelihood of a crisis or disaster occurring or advancing.

There are two major interrelated steps for disaster prevention and planning according to Kim and Lee (1998: 191): prevention and mitigation; and the preparation of the pre-disaster phase. The pre-disaster preparation involves the development of emergency plans, warning systems and other activities adopted before a disaster to be triggered in order to facilitate their management. At the organizational level, anti-crisis contingency plans should be developed, including the formulation of a Crisis Management Team (CMT), construction of manuals and procedures, staff training and simulation exercises. All these activities can help to ensure that an organization is prepared and capable of responding more effectively to this kind of events.

One of the most important elements in dealing effectively with a crisis or disaster is through communication. Effective crisis communication is necessary in order to deal internally with internal stakeholders and externally with external agents. It is vital the control over the communication and the messages about the nature, impact and outcomes of a crisis or disaster. The media can influence the flow and intensity of a crisis or disaster, or even induce an incident or problem in a crisis due to the covering of the situation with strong negativistic bias. Subsequently, organizations need to work with the media to ensure that a consistent and precise message is transmitted to the public and the various stakeholders. A crisis or disaster communication plan should be part of the pre-event strategy, but also needs to be flexible, depending on the nature of the crisis and the response of those external agents.

Communication and public relations of crisis and disaster can be achieved by the integration of field theories of crisis communications with the field on crisis and disasters in the industry concerned. In particular, public relations and communication efforts that managers can implement on the emergency phase and the intermediate phase of a crisis or disaster and also as part of the process of long-term recovery. It will be interested to note the shape how destinations and organizations work with the aim of resolving the crisis or disasters, looking restore the finally normal conditions. However, one wonders if in some cases the normality can never be restored. Some crisis, depending on their size and nature, can have a dramatic impact on individuals, organizations and locations. In some cases, the resolution or restoration is significantly complicated by the fact that these sites are still under the impact of a problematic event, while others may find themselves already in resolution or even others having not yet suffered any impact.

One of the most positive outcomes of a crisis or disaster is in the generation and sharing of knowledge associated with these events, which can be used in planning future crisis or disasters. Thus, we highlight the need for knowledge management, and the importance of knowledge in survival and adaptation to a location or organization that may face a crisis. It becomes pertinent to recognize the different types of knowledge and knowledge requirements throughout the lifecycle of a crisis or disaster for acquisition, storage, distribution and interpretation of knowledge. The next phase focuses on organizational learning and feedback, namely in the stage of review and reflection of the crisis or disaster's lifecycle. It is noted that the new knowledge permits the re-evaluation of ideas and beliefs currently understood, leading to the possibility of future changes.

A framework for crisis and disaster management

Several authors have tried to understand the crisis and disasters, starting with defining them. According to Keown-McMullan (1997: 8), a universally accepted definition of what constitutes a crisis has not yet been developed and is unlikely to emerge in the near future. Pauchant and Mitroff (1992: 15) believe that a crisis is an "interruption/disruption that physically affects a system as a whole and threatens its basic assumptions, the subjective sense of self or their existential essence".

A crisis is defined as "any act or omission that interferes with ongoing functions inside of an organization, like an acceptable execution of its objectives, its viability or survival, or has a detrimental effect and be seen for most of its employees, customers or constituents"(Faulkner 2001: 136). This definition focuses on the perception, indicating that, in this phase, if a public organization or stakeholder perceives a crisis, a true and real crisis can evolve from a possible misunderstanding, illustrating that perception management is also an important consideration in managing crisis.

Santana (2003) suggests that, in the definition of crisis, the term itself is problematic due to the construction itself, its application in different fields and due to its use in literature in conjunction with terms such as disasters, catastrophes, startle, problem, and turning point. However, Laws and Prideaux (2005) found a good point of agreement on a consistent typology for terms that describe crisis in tourism, contributing to facilitate dialogue and communication with other researchers in the field of crisis management, vital in the promotion and understanding of knowledge.

The most common features of crisis tend to be internal, and so, organizations have some power or influence over the crisis. Another common theme expressed in the definitions is that the scale of damage seems to be a key differentiating factor. If an incident or event has or not impact on survival, viability or function of an organization, then it may be considered a crisis. The urgency and speed to handle an incident is also a key point in many settings and suggests that crisis can be unpredictable, which is why a proactive approach is important to planning and management crisis. For example, Keown-McMullan (1997) notes that the speed of a developing crisis and the speed of response are critical for managers. However, as Santana (2003) suggests, crisis are emotional situations, putting pressure on managers, ensuring that quality

decisions are difficult to make and implement. Another approach notes that a crisis is often a turning point for an organization and may have positive or negative impacts and changes for businesses and communities.

Many of the characteristics attributed to crisis are equally applicable to disasters (Faulkner, 2001), and so confusion in their distinction can be possible, there may occur overlap of the two terms, being that the crisis can occur as a direct result of a disaster. Kim and Lee (1998) in their article use the two terms together, while Hills (1998) suggests that the boundary between the natural and human-induced behaviors is blurred. Faulkner (2001) considers the main distinction between what can be called a "crisis" and a "disaster" to be the extent to which the situation is attributable to the organization itself, or can be described as originating from outside the organization. Thus, a crisis describes a situation where "the root cause of an event is, to some extent, self-inflicted through such problems as inept management structures and practices or failures to adapt to change," while a disaster can be defined as "when a company (or group of companies) is confronted with a sudden and unpredictable catastrophic changes over which it has little control" (Faulkner 2001: 136). Faulkner (2001) suggests that crisis are passive to some extent, capable of being controlled and under the influence of managers, while disasters are often external and more unpredictable.

Prideaux (2003) notes that "disasters can be described as unpredictable catastrophic changes, which normally can only be addressed after the event, either by activation of contingency plans already in place or by reactive response". The key point is that events and external changes can provide a higher degree of risk and uncertainty than the events and internal changes (Evans and Elphick, 2005).

Hills (1998) suggests, from a perspective of emergency planning, that disasters are sudden and overwhelming events that occur for a limited period at a distinct location. Although they may be limited by time and location, they can require a significant amount of time after the occurrence for recovery, while some victims may never fully recover, if they actually survive. Therefore, disasters and even crisis may contain a deep psychological tract associated, as we shall see in the context of resolution and ultimate recovery from a disaster.

A disaster, as defined by the International Strategy for Disaster Reduction (ISDR 2004: 338) is "a serious disruption of the functioning of a community or a human society, causing generalized material, economic and environmental losses and that exceed the capacity of the community/society affected in coping with their own resources. A disaster is a function of the risk process, it's the result of the combination

of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk."

Although disasters induced by natural conditions or ecosystems are beyond the control of humans, vulnerability is the direct result of human activity and living conditions, and disaster is the realization of a hazard (Smith, 1995), while natural disasters have been called humanitarian disasters with a "trigger" natural (Pelling, 2003: 4).

John Twigg (in ISDR, 2004: 22) states that "strictly speaking, there are no such things as natural disasters, but there are natural hazards. A disaster is the result of the impact of a potential hazard to society. Thus, the effects of a disaster are determined by the degree of vulnerability of a community to the danger (or, conversely, their competence, or the ability to deal with this). This vulnerability is not natural but the result of a whole range of factors in constant physical, social, economic, cultural, political and even psychological mutation that shapes and shape people's lives and creates environments in which they live. "*Natural* disasters are the judgment of the nature of what humans have done". This quote clearly illustrates the great variety and the ways in which researchers and managers can realize a natural disaster. Many authors have addressed the study of disaster management through the application of concepts and theories of sociology, politics, geography, economics, information technology and physical sciences. Quarantelli (1998) illustrates that, as some of these different disciplines perceive or define "disaster" in terms of their own perspective. Hazards are "potential threats to humans and their welfare [...] risk is the likelihood of the hazard"(Smith 1995: 6) which leads to triggering events, eventually causing disaster and possible impacts.

The classification and understanding of crisis and disasters

Several authors have tried to understand crisis and disasters in the first instance by defining them, secondly by explaining according the nature of crisis and disasters and their lifecycle or anatomy to help improve our understanding of these phenomena, and thirdly by highlighting the complexity and chaotic nature of incidents that pose challenges in the management or prevention of crisis or disasters. According to Coombs (1999), crisis can vary from small scale – organizational issues ranging from personnel diseases, challenges and personal breakthrough, hostility, infractions in organizations, to external factors such as natural disasters,

like earthquakes, floods and fire, often due to global environmental changes, as well as terrorist incidents. Beeton (2001: 422) notes that "crisis occur at all levels of the tourism operations, in several degrees of severity, ranging from environmental, economic and political disasters to the internally generated crisis such as accidents and sudden illness".

The discussion that matters here will focus on crisis or large-scale disasters that have the ability to cause major damage to a location and their organizations. This is because dealing with challenges is an integral and common part of strategic management, as opposed to crisis management and disaster. Furthermore, most of the literature in the field of crisis management and disaster management is concerned with larger-scale crisis and the respective planning and management. However, the way in which these crisis or disasters are managed can provide information for the management of minor crisis at the organizational level. It should also be noted that small-scale incidents can turn into crisis or large-scale disasters if treated ineffectively, producing a drastic impact on the reputation of an organization or a destination and its future viability. As Wiik (2003) found while researching on crisis management of tour operators in the UK sector, often the smaller and more obscure incidents are the most difficult to manage for tour operators, as these are less common than incidents or problems of larger scale (such as political instability), for which operators can be better prepared.

The incidents that, taking into account the main requirements, will either be a crisis or a disaster, in that they all involve sudden changes, potentially causing serious social and economic damage and require urgent and fast action by organizations and destinations. However, some of the events can be clearly self-inflicted (as organizational errors) and can also be defined as crisis, while others are clearly not self-inflicted itself (such as natural disasters), although some processes and human actions can be partially responsible (such as the construction of resorts by the sea or in environmentally sensitive areas such as mountainous regions). In addition, some natural disaster could lead to economic crisis, (to the extent that they are interconnected). In terms of scope crisis and disasters can be international, national, regional, local, or organizational. Some crisis and disasters can also be considered long-term (such as civil war or political instability), while others are short (like air strikes).

Similarly, Parsons (1996) suggests three types of crisis: (1) immediate crisis: where there is little or no notice, therefore, organizations are unable to detect the

problem or prepare a plan before the crisis emerges; (2) emerging crisis: these are slower in their development and there may be the ability to halt or limit through organized actions; (3) persistent crisis: can last for weeks, months or even years.

Moreira (2007) differentiates catastrophic risks (such as sudden negative impacts, like as plane crashes, disasters of extreme events) that have short-term consequences from invisible risks (such as gradual increase of negative or natural conditions, e.g. crime, and the gradual degradation of neutral or positive conditions, such as environmental quality). The strategies for coping with these crisis vary, depending on the time pressure, the size of the control, the magnitude of the incident, and whether management perceives the situation as a crisis or simply as a matter that should be treated as a normal part of the functioning of strategic management.

Although other crisis and disasters can cause disruption, social and economic problems for organizations and destinations, crisis and natural political and economic disasters are often the most durable and have more significant impact on organizations and destinations.

Tourism is extremely susceptible to changes in economic patterns, including exchange rates and levels of disposable income. In times of global recession, tourism may decrease and destinations and organizations may have to deal with a drop in demand and visits. In particular, the Asian economic crisis of 1997/1998 had a major impact on growth rates that were registered in the tourism sector. Leiper and Hing (1998) note as an example that outbound tourism from South Korea to Australia fell by 80% in early 1998 compared to the same period in 1997. Moreover, transit destinations like Singapore also found themselves harmed more than other destinations, with a 17% reduction (Leiper and Hing, 1998). However, travellers from the U.S.A, Canada and Europe increased towards the Asia-Pacific region because of the cost-benefit ratio due to exchange rates, as the currency fell sharply in the region. This illustrates the chaotic nature of crisis and that these offer advantages but also drawbacks, which have previously been observed to in these discussions, given the definition of crisis.

Climate changes, forest fires and pollution are often interrelated with global environmental problems, or are even the cause of natural disasters or crisis that do trigger (Gossling and Hall, 2006). Changes in weather patterns, especially patterns of 'El Niño', may be the cause of droughts in several countries in 1997 in the Asia-Pacific region.

The impact on transportation, and communications infrastructure from natural disasters can also discourage the visit because of access issues arising from them (Huang and Min, 2002).

Another problem associated with climate changes are changes in weather patterns. Vikulov and Faulkner (2001: 331) discuss the floods in Katherine, Australia, who observed that for the community of Katherine and its tourist industry, the "Day of the Flood" in Australia in 1998, was a major disaster. Floods in Prague in August 2002 did reduce the number of visitors by a third with 30,000 passengers to cancel reservations at Czech Airlines Company in two days after flooding (Field, 2003).

The rising temperatures as a result of climate change may not only create more forest fires, but also affect visitors, increasing the risk of heat stress and infectious diseases. For example, Becken and Hay (2007) point out that Western Europe might experience an increase of 10°C in temperature due to the greenhouse effect produced by warming. The increase in temperature will increase the sea level between 0.1 and 0.6 meters in the 21st century (IPCC, 2001), creating a high sea level with a higher ripple may increase coastal erosion especially harmful for small states / islands.

Biological disasters or biosafety also had a recent impact on the tourism industry and should increase in the future due to increased human mobility (Hall, 2005, 2006). The outbreak of foot-and-mouth disease in the United Kingdom in 2001 caused a major impact on the tourism industry in the UK and especially in London.

As Hall and O'Sullivan (1996: 105) note, "the problems of political stability and political relations within and between states are extremely important in determining the image of tourist destinations in regions of origin, and of course, the real and perceived safety of tourists". Examples such as protests, violence, civil and international war, and political coups or terrorist incidents can have a big impact on image, perception of safety, and finally, demand for tourism, eventually swallowing destinations in crisis. Crisis and political instability may erupt into acts of war, terrorism or violent activities. Beirman (2002) observes that political disasters can potentially have more serious consequences for the marketing of a tourist destination in relation to natural disasters.

People can be direct or indirect victims of political instability, targeted by terrorists in their quest to force political change, and are part of the tactics, ideological or strategic long-term goals (Hall, 1994).

Similar to the discussion about the nature of crisis and disasters, political instability and its impact on tourism can lead to an immediate, prolonged or emerging

crisis. Immediate crisis include acts of terrorism with direct or indirect implications on tourism and the travel industry. Recently there was the impression that tourists and their industry are becoming terrorist targets as a method of achieving their ends (Sönmez, 1998; Wall, 1996), in the following ways: (1) generate more and more publicity for terrorist causes because the focus moves from national to international media; (2) cause more and more economic disruption; (3) use tourists as ambassadors for specific countries and easy targets (both to identify and to reach).

The Bali terrorist bombings of October 2002 and October 2005 are more direct examples where Western tourists were specifically targeted because they were ideologically opposed to tourism and the tourists represented. In 2002 a total of 202 people did not survive the explosions in Bali, among which the largest number of people affected were British and Australian citizens. As a result, the impact on tourism was devastating, with the occupancy rate of the hotels in Bali falling from 69% to 18% after the attack.

Over a period of two years from January 2000 to June 2002, a fall of 34% in domestic air passenger transport and 23% for international travel was observed as a result of the terrorist attacks of September 11, 2001 in U.S.A. (Blake and Sinclair, 2003). The economic impacts of September 11 on the national economy of the United States of America were evaluated for Blake and Sinclair (2003) using a computational general equilibrium model (CGE), the first time it was applied in the field of management of tourism crisis. Their research found that, in the absence of countervailing policies, the terrorist attacks have decreased GDP by almost 30 billion dollars in the U.S.A. with the most impact felt by airlines and the accommodation sector, with half a million jobs lost.

The long-term political instability may also have an impact on demand and tourist flows. Beirman (2002) provides the example of the dispute between Israelis and Palestinians as a case of a persistent and prolonged crisis that is well known. With a track record of agreements and disagreements fairly active, it becomes somewhat difficult to reconcile this dynamic with a profitable tourism activity so there are many problems, risks and obviously losses and reduced periods of good performance or success, but the potential exists. After a ceasefire in 1994, the number of visitors increased by 59% compared with the previous year as the improving political stability (O'Neil and Fitz, 1996).

The differentiation between incidents or natural events and crisis or disasters

As with the definition of a crisis, it is the threat, the time pressure, and intensity of the incident, which perhaps lead to the emergence of a crisis. The combination of these factors can lead to the development of a "continuum" of crisis to help classify and understand such incidents, and more importantly, to illustrate to the managers, the moment when an "event" or a "problem" can shift to a "crisis". Burnett (1998) presents a classification matrix of crisis that uses an array of 16 cells based on the level of threat (high and low), the response options (many or few), time pressure (severe or minimal) and the degree of control (high or low).

Burnett (1998) indicates that it may encounter problems that can not be classified as a crisis, but allow general responses of strategic management, as part of normal management function. The most challenging problems are just that time pressure is intense, degree of control is low and threat level is high, and the answer choices are few in number.

The dangers that may materialize are likely to lead to disaster and are generally categorized according to the probability or likelihood of occurrence and potential impact on people and their well-being. The relationship between environmental hazard probability and risk shows that the risk to human life is superlatively ranked in respect to damages, economic or environmental goods, and these combine to create levels of low, medium and high risk (Smith, 1995). According to Hills (1998) and Heath (1995) most of the planning and emergency management policy focuses on events of low but highly probable impact, rather than low probability, high impact events, and ignore the potential of disasters creating other linked incidents.

According to Heath (1995), the magnitude of a crisis can be seen by the following six attributes: (1) the degree to which the impact damage appears to occur randomly; (2) the size of the impact area; (3) the severity of the impact; (4) the relationship between the visible and invisible damage; (5) the number of large sub-events of crisis triggered by the impact of the main event; (6) the degree of psychological distortion caused (or accelerated) by the impact of the event.

In the phase of definition of crisis and disaster, disasters are related to the concepts of vulnerability and risk. Risk is the probability that a certain level of loss may occur due to the impact of a hazard, whereas vulnerability is the potential for loss or other

adverse effects (Alexander, 2000). The risk is therefore associated with the likely scale and magnitude of a natural hazard. However, as Alexander (2000) notes, the two are interrelated in such a measure that vulnerability, in light of a known hazard, produces risk, while admitting the risk creates vulnerability in danger situations.

In tourism, few discussions have been developed on the scale of crisis and disasters, and the development of typologies or classifications. Prideaux *et al.* (2007) propose a classification of four scales of "shocks" and give examples of types of shock events. They note that there are shocks which have the ability to cause greater disruption to the travel because they have a low probability, but a high level of impact. The classification criteria used by the authors combine both scale as the likelihood of these incidents occurring to form a classification model. However, agencies so far have become more concerned with the prevention of incidents of high probability and low impact (Hills, 1998). This view may be changing after the recent events of low probability and high impact such as the September 11, 2001 in the U.S.A. and the Tsunami in December (Boxing Day) 2004 in the Indian Ocean.

Understanding the difficulty: chaos, complexity and interdependence

Due to the chaotic nature of a crisis, the uncertainty and lack of information around them, despite the obvious need, rarely will it be simple for managers to understand and manage the impacts of these incidents.

Complexity and chaos theory can provide some information on crisis and disaster management (Pelling, 2003). These theories have emerged as a school of thought to describe how complex the operation of systems are (McKercher, 1999), and according to Pelling (2003) can provide a framework for bringing together diverse elements and approaches to disaster management. Faulkner (2001) indicates that crisis and disasters illustrate chaotic situations and reveal the complex interrelationships between human and natural systems. Understanding the relationship between cause and effect and the implications of decisions and actions is a complicated process. This is illustrated in the case of FMD, which began with a crisis in the agricultural sector and ended as a disaster through the way it was handled (Miller and Ritchie, 2003).

Chaos theory is the study of complexity, which explores non-linearity of complex systems. Linear systems are closed systems, like computers and airplanes, while open systems are nonlinear and can interact and mingle with each other like human beings, Nature and weather systems. These are unpredictable, dynamic

and the future is not determined by the past, which makes the prediction of future natural disasters, especially due to climate change, extremely difficult (Becken and Hay, 2007). In the case of research in tourism, Faulkner and Russell (2000) note that despite a Newtonian paradigm being used, the philosophy of research is more in tune with stable systems and therefore may not be as useful to explain the turbulence and underlying dynamics change, as in situations of crisis and disasters.

The chaos and complexity perspective evaluates systems that are imminently complex and unstable (Russell and Faulkner, 1999). Although the tourism system could be considered linear, it is often also non-linear and chaotic, particularly as a result of crisis and disasters and their subsequent impacts. Small changes in a system can create a chain reaction that could eventually change the structure of the tourism system, creating crisis events linked together. A small incident can trigger a crisis or disaster, which in turn can have a major impact on the tourism destination of a system or organization, and how the system tries to adjust to, just to skip the "edge of chaos"to own chaos.

To consider crisis and disasters as elements of chaos means a fundamental shift in how we see such incidents and poses the question of whether crisis and disasters can be managed effectively due to their chaotic and complex nature. These suggest the need for interdisciplinary research and an integrated approach to disaster management and emergency. However, they also suggest that systems of tourism and research in crisis management in the sector should consider new conceptual and methodological tools to help analyze the turbulence more effectively, since the tourism system seems to be in a constant state of chaos. The traditional paradigm of Newton discards chaos as noise in the system, while chaos theory evaluates seizure as an intrinsic element of complex systems (McKercher, 1999: 429). This discussion of complexity and chaos suggests that one should consider employing a more strategic approach to such incidents, dealing with crisis and disasters in a flexible, yet holistic (total / full) way, and they should not be afraid of change so inherent in open systems, before which tourism should produce processing, stability and long-term vitality.

Strategic planning and crisis and disaster management

Planning has been defined as the development of a desired future and the most effective way to achieve it (Richardson and Richardson, 1992). In short, it is a process that begins with information gathering and ends in the elaboration of an action plan. However, it is not really the process of implementing these plans, but part of the "process of planning-decision-action"(Hall *et al.*, 1997). As Richardson and Richardson note (1992), planning is therefore something that: (1) designs and precedes action; (2) seeks to adapt to the appropriate actions in order to make sense of something that should happen before (should be totally correct); (3) aims to achieve the outcomes (goals) desired; (4) is the answer to the pessimistic belief that unless something is done, a future desired state will not occur, and the optimistic things we can do to improve our chances to achieve the desired belief state.

Planning is essentially needed because, as a business and to society in general, physical and financial resources are limited and a more effective and efficient way to use these resources is needed. Information has to be gathered and decisions made about the allocation of these resources, and policies or plans should be created in order to provide the best possible use. From a business perspective, planning is vital to keep in touch with the "external operating environment", including competitors, trends, and of course, the impact of external changes, including shocks, crisis and disasters. However, although planning is a process, Hall (2000: 7) notes that the various activities of the planning process are difficult to isolate, since they may include facts such as negotiation, compromise, coercion, values, and policy options and politics.

Gunn (1977: 85) notes that, because of the fragmented growth of the tourism industry and its systemic nature, "the general planning of global tourism system is long overdue... with no philosophical or political force, or global coordination to bring the many parts of tourism to the harmony and ensure that your function is harmonious." Getz (1987: 3) defines tourism planning as "a process, based on research and evaluation, which aims to optimize the potential contribution of tourism to human welfare and environmental quality". Similarly, Murphy (1985: 156) notes that "planning is related to anticipating and regulating change in a system, to promote the orderly development so as to enhance the social, economic and environmental benefits of the development process."

Hall (2000) indicates that most of the planning in tourism tends to concentrate on planning the destination instead of planning in the industry, based on spatial planning at regional or local level. Hall (2000: 12) notes the breadth of planning, suggesting that tourism planning occurs: (1) in a number of ways (eg, infrastructure, land development, and use of resources, organizing, staffing, promotion and marketing); (2) a set of structures (e.g., quasi-governmental organizations, government and different non-governmental); (3) a set of scales (e.g., international, transnational, national, regional, local and sectoral); (4) a number of different time scales (e.g., for the development, implementation, evaluation and satisfactory fulfillment of the objectives of planning).

The link between the development of plans and policies and their implementation is often made through the managers who provide leadership before the operation and a more tactical coordination of strategies and operational plans. The tasks of leadership are more oriented to planning and vision of the destination or organization, while management tasks will be focused on the implementation and tactical control of plans and operational strategies. Management is essentially coordination, implementation and monitoring of various plans, policies or strategies. As Cole (1996) suggests, management is the planning, organization, motivation and control, management of human and financial resources, and the development and coordination of organizational structures.

The role of strategic management in crisis and disaster

Developing strategies and planning and strategic management in organizations has grown since the 1960s as an attempt by organizations to have a more long-term vision and in order to consider the impact of the external operating environment. According to Chaffee (1985), the definitions of strategy can be considered linear, adaptive or interpretation. Phillips and Moutinho (1998: 42) provide examples of definitions for the three types of models that Chaffee (1985) proposes. An example of the linear strategy exists when the planning is used to counter competition and achieve organizational goals. Adaptive strategy is concerned with a realignment of the organization itself with its external environment (both industry and the micro environment and wider macro environment). Finally, Phillips and Moutinho (1998) provide an example of the third type of strategy, an interpretive approach that is concerned with the motivation of organizational actors. Chaffee (1985: 93)

provides an example stating that the strategy is "guiding metaphors constructed in order to conceptualize and direct the individual attitudes of organizational participants".

One of the most cited authors in the field of strategy, Mintzberg (1987) suggested that the term "strategy" can be used in several different forms and can be seen as: (1) a plan (by which an organization creates a strategic plan that may include different elements, such as a marketing plan, a financial plan or a strategic plan for expansion into new markets); (2) a maneuver (or a short-term strategy with tactical objectives as threatening to lower prices to influence competitors); (3) a pattern of behavior (where an organization through consistent behavior emerges for success rather than actually formulating a strategic plan. This is considered an emerging strategy); (4) a position (such as low cost leadership similar to the policy of the airlines EasyJet and RyanAir, or those airlines that compete on service and reputation as British Airways); (5) a perspective (which may serve to change the culture of an organization in a customer orientation, or more flexible in dealing with a changing environment).

The five elements strategy proposed by Mintzberg (1987) illustrates that strategy can be either planned through either a deliberate or emergent "plan", by the consistent development of "patterns of behavior", as there may exist in strategies related to the organization itself, its competitors and customers.

Tribe (1997: 3) notes that we are in a field where the actions involve decisions that: (1) are complex rather than simple; (2) are integrated rather than isolated; (3) are long-term rather than short term; (4) are proactive rather than reactive; (5) have an impact on the whole, rather than just on a part of the organization; (6) involve major changes rather than small changes; (7) involve large projects rather than marginal adjustments; (8) are made by individuals in positions of power in the organization, rather than subordinates.

The strategic planning and management are generally related to four main elements according to the prescriptive theory (Johnson and Scholes, 1993, Richardson and Richardson, 1992; Viljoen, 1994): (1) strategic analysis, consisting in analysis of the operating environment macro or micro; (2) guidance and strategic choice, consisting in the development and selection of strategic guidelines and specific strategies to achieve organizational goals; (3) strategy implementation and control, consisting in the development of appropriate organizational structures, human and financial resources strategies, providing leadership to control and enable the implementation of specific strategies; (4) strategic review and feedback,

consisting of continuous improvement as an important part of strategic planning and management, and organizations learn how to improve the effectiveness of strategies through monitoring, evaluation and adaptive management.

The strategic analysis and direction/choice are related to the collection and analysis of data relating to the organization and its external operating environment, as well as the identification and selection of strategic or tactical alternatives guidelines to implement. The actual implementation, monitoring and evaluation of strategies and plans that have been decided in the planning stage are considered management functions (Phillips and Moutinho, 1998).

At the stage of strategic analysis is the time when the internal resources of an organization or a destination, including tangible resources such as physical assets (buildings and equipment), human resources, financial resources, and also intangible assets such as motivation and corporate image, are examined and compared with the external environment of the industry and with the remote environment.

The final stage of planning and strategic management process incorporates evaluation and control. The process of planning and strategic management involves a feedback process in which the modification can be taken back to the future strategic planning based on the actual degree of success during implementation, and based on the objectives or performance indicators that might entail (depending of the strategies implemented), for example: market share, profit or increase in stock price.

While one can agree that it is impossible to consider all scenarios for future development and thus perform a classical or rational comprehensive approach to planning and crisis management, organizations should consider, understand and respond to crisis and disasters in a more strategic and comprehensive way.

Elliot (2006) indicates the existence of a strong parallel between strategic management and crisis, and says there are several reasons why the strategic management should be better integrated with crisis and disaster management in tourism. First, there seems to be a growing number of crisis and disasters that occur, perhaps due to the current state of the world, and end up having an impact on tourism systems. We live in uncertain times, with models of development, and patterns of globalization and current environmental changes, and organizations and destinations far more susceptible to crisis and disasters than ever. Secondly, there is a need for a more holistic approach (including the phenomena holistically) and integrated crisis and disaster management systems in tourism companies and destinations ranging from local, regional, national, transnational and international.

Third, there is a positioning by organizations and destinations to distance themselves from response or the management of incidents of this dimension (crisis or disaster).

Richardson (1994, 1995) notes that there is a move beyond the mere management or response to this incident type is needed. This requires a paradigm shift from "this will not happen to me" to "probably it will happen and then what I do". Kash and Darling (1998) believe that although crisis management is a requirement for organizations, many are not able to take effective measures to tackle crisis situations.

Kash and Darling (1998: 180) note that decision-making under pressure, excitement and danger on a crisis situation is much more difficult than having to react to a crisis with a pre-approved framework. Proactive planning helps to control and resolve a crisis. Ignoring the possibility of a crisis, on the other hand, can lead to crisis itself coming to be.

Finally, having a more strategic and holistic approach to crisis management can reduce the probability of occurrence of events linked through effects on "escalation"or "chain"that occur due to the chaotic and complex interrelationships within an opened system like tourism. Richardson (1994, 1995) notes that return to a more stable and simpler time could reduce the complexity and chaos around the world and reduce the chances of promoting crisis through the effects of chain.

In today's world, dominated by the paradigm of the free market, with globalization and increased global mobility, it is unlikely that this will happen, especially in a system as open, international and interconnected as tourism. However, some pre-planners or thinkers, through strategy that can be modified depending on the type of crisis or disaster found, can possibly limit the hasty and ineffective decisions that lead to such adverse effects.

A more strategic and integrated approach to the management of crisis and disaster on a destinations (with emphasis on hazards and natural disasters) was brought by the UNO. They tried, through its publications, to put the discussion on the concept of risk reduction, rather than crisis response. The International Strategy for Disaster Reduction (ISDR, 2004) has shown that the focus of the past in the field of emergency management and crisis management should move to strategies of risk reduction.

Heath (1998) identifies two main approaches to crisis management: the traditional approach of crisis management; and the approach to risk management. The traditional approach does not involve planning or initial management (pre-crisis), the approach begins when the crisis begins. The approach will be to respond to the crisis and manage

impulses and impacts effectively and efficiently, and the results are then kept for future reference.

The risk management approach follows the traditional crisis management approach, as it begins where the other ends and is attentive to the assessment and management of risk before the crisis begins (pre-crisis). When the crisis emerges, it is then in position of implementing the appropriate response and recovery plan. Again, similar to the first approach, learning and feedback are crucial for the development of management planning requirements of future crisis. Heath (1998) argues that authors and authorities often ignore the reduction, for two main reasons: because of the reactive mentality of the individual, and because reduction activities and preparation reduce the excitement and challenge of response and recovery management.

Heath's model (1998) suggests that the reduction can occur before a crisis struck the organization through risk management strategies as part of the strategic planning function. He considers the readiness, response and recovery as part of strategic management, although he notes that readiness is a bit different from the other two categories, since it requires awareness, training and testing/ exercises (which should be assumed to be part of the planning function).

However, Heath (1998: 270) notes that the response and recovery management tends to be slow, expensive, inefficient and potentially dangerous for the people involved if the planning has not been the most appropriate and up-to-date, if the training is rarely done or is carried erratically, or when crisis situations are not in any way familiar to these people.

Other authors also address a pre-disaster or pre-crisis crisis and disaster management. Hystad and Keller (2006) suggest a model of four phases for disaster management (pre-disaster, disaster, post-disaster and resolution), while De Sausmarez (2004) and Santana (2003) suggest three stages in crisis management: proactive (signal detection, preparedness, prevention) and two steps after emerging crisis (damage limitation and recovery) with learning to occur at all stages. In the arena of disaster management in tourism, Faulkner (2001) proposed a framework for dealing with disasters on tourism with particular emphasis on reducing and terminating a more strategic and integrated perspective of disaster management in a vision for tourism. This model framework sets out the elements of disaster response in this sector as well as the main ingredients of disaster management strategy for each stage of the lifecycle of disaster.

The final phase of dealing with crisis and disasters in a more strategic and holistic way is the phase of evaluation and feedback, as the destination or organization begins to recover from a crisis and normality begins to occur. The primary purpose of an organization or a destination is to control the crisis or disaster and reduce its severity or even stop it completely. However, crisis and disasters are chaotic and complex and their impacts can bring lasting change to the system, and these changes may be positive or negative.

The challenge for organizations is monitoring the operational environments, external and internal, to predict possible problems and deal with these before they become crisis. There are a number of systems and appropriate techniques to the enterprise level that help enable early identification and warning of possible problems, shocks and crisis in the political, economic, social and technological field.

Rousaki and Alcott (2007: 28) note that the state of readiness is a state of mind and "readiness to the crisis... can be broadly defined as the readiness to deal with the uncertainty caused by a crisis." Moreover, one of the biggest problems in responding to crisis is the lack of information, experience and preparation with the intensity and speed at which they occur. The development and use of systems and techniques such as predictions, in order to gather information and check for signs of crisis and natural disasters, along with the development of plans and strategies for managing crisis and disasters can reduce vulnerabilities and improve their ability to deal with these incidents might arise. This can be as valuable time on response actions in order to help curb demand for resources (Reilly, 1987).

However, it is also noted that current prediction techniques are based on the Newtonian paradigm, which in turn, are not as useful for designing immediate shocks, such as crisis or disasters, which can be, and many like this happens again, triggered by incidents outside the system. There are a number of interrelated development of crisis preparation and planning steps, including: (1) verification problems or signs that may turn into potential crisis through the use of specific indicators (political, economic, social, technological) and information sources; (2) examination of the potential risks, predictions and scenarios planning crisis and its likely impacts; (3) the creation of preventive and contingency plans to include a system of strategic management of crisis, involving a team of crisis management for training people and selection of appropriate resources.

The sources of information in problem identification

The first step after systems and people have been dedicated to the task of strategic management problems is the identification of the problem from a number of sources, including the external environment, trends in the company and their performance trends.

The problems must be examined with regard to achieving the goals of the organizations, however, it's often difficult for managers, as they are called to use judgment based on their assessment and collection and use of information from outside the organization (through the use of experts, for example). Here, it is important to examine the likelihood of an event or problem occurs and its impact resistance. In this sense, the classification matrix of Burnett (1998) crisis can be very useful for differentiating potential issues (which could be dealt with later or simply monitored) with the impending crisis.

According to Burnett (1998) and Billings *et al.* (1980), the perception of loss and probability combine to create a threat. Along with the lack of information, time pressure and lack of control, this loss and perceived probability could propel a problem into a crisis. A minor impact would drop the issue from the list of problems according to Ansoff and McDonnell (1990), while a major impact along with an urgent need would be a need for immediate action in the organization, so a quick response is vital. If the response could be delayed until the next planning cycle, it can then be designated as deferrable. If, according to estimates, the answer may be postponed indefinitely until better estimates of the impact can be developed, the event is marked extendable.

The main threats and opportunities and priorities are annotated and defined according to their anticipated impact, and the key problem list is updated on the measure as problems are solved, become smaller or new ones added by the analysis of the problems. Although this process is useful for analyzing the potential impact and the urgency of unique events, this can not analyze the impact of trends and interrelated events and their interdependence.

The business impact analysis of transverse (cross-business impact analysis) may perhaps be a better tool, since analyzes the impact that a series of events may have on the strategic lines and fields in which the organization is involved.

According to Witt and Moutinho (2000: 298), the cross-impact analysis is a technique lesser known but useful to examine the inhibition of unfolding events and relations between events that may initially seem unrelated. It is useful for checking/monitoring environmental for organizations to observe the likely impact of trends. It consists of selecting a small number of people (top decision makers and external consultants) to specify the critical events related to the theme of the project, while each event is placed in the matrix and the impact of each event on every other event is reported (Witt and Moutinho, 2000). High threat events are defined with a high negative value, while opportunities are provided with a positive value, and these can be assigned numerical values by the participants. The team members with decision-making roles may be involved in more than one round of voting score or related problems, and revision of the matrix gives managers a good understanding of these events, which can be strongly active and significantly reactive, whose importance for strategic planning and development strategy is certainly important (Witt and Moutinho, 2000).

Along with general management issues and impact assessments, there are more specific indicators and techniques which can be used to help predict or evaluate the likely impact of incidents and events that may evolve or derive, if untreated, in crisis. In the field of politics and economics, there is the analysis of political and business risk, environmental risk analysis that often uses strategic predictions tools, including techniques of modelling quantitative and qualitative. The prediction often involves the use of a range of analytical tools to assist in decision making and should be integrated with organizational planning (Witt and Moutinho, 2000). The prediction, at a strategic level can be performed, according to Cole (1996: 68), in two main groups: (1) Quantitative (i.e. where the projections are based on numerical data, such as statistics and accounting data, many times analyzed by computer-based models). This approach uses data and techniques "hard" such as budget predictions, simple projections, computer modelling, including econometric analysis, being a rational/deterministic approach; (2) Qualitative (i.e., projections based on explicit assumptions and individual judgment on these). This approach uses "soft" data and techniques as PEST, SWOT, scenario planning, brainstorming and Delphi technique. This is an intuitive approach to prediction.

While not pretending to explore in depth predictions techniques, they will be important to determine the types of prediction tools that can be used to prevent or reduce the impact of economic, political or social crisis. Calantone *et al.* (1987) note

that there are several types of prediction: (1) exploratory predictions that extrapolates past trends through regression or time series analysis based on assumptions about the relationships between variables; (2) the normative prediction that incorporates discussion about the methods needed to achieve a desired future outcome; (3) Integrative prediction based on a variety of methods to determine the underlying relationships between a variety of predictions, and to maximize the integration of these predictions; (4) speculative prediction that uses qualitative techniques like scenarios planning or expert judgment, as in Delphi approach. This approach has been used frequently in the tourism industry since 1970. Delphi technique belongs to a set of qualitative research methods that depend on the judgment of individuals supposedly expert in the subject under consideration.

Other techniques that are employed in aiding decision making or judgments include executive opinion panels, reviews of subjective probability, and research consumer intentions (Frechtling, 1996). Delphi approach is often used in cases of technological and specific events. Lloyd *et al.* (2000), for example, used the Delphi technique to predict changes in the Hong Kong hotel industry as a result of the transfer of sovereignty from Britain to China in 1997.

There is a clear division between the use of exploratory predictions techniques and rational/deterministic rules which uses the analysis of quantitative data and those that are more intuitive/judging, proper for speculative prediction techniques. However, integrative techniques combine these two types in order to maximize the predictions. Scenario planning can be useful to sensitize decision-makers to the potential outcomes and trends of events (Grewe *et al.*, 1989, 112).

Other sources of prediction information are called Business Environment Risk Index (BERI), which attempts to predict the political climate and stability of the industry in approximately 130 countries. The index is composed of three elements, according to Glaesser (2003: 127-128): (1) the Operations Risk Index (ORI): evaluates the business climate over 15 factors that affect the investment climate; (2) Political Risk Index (PRI) which assesses political stability in a country across 10 criteria and the causes and symptoms of instability, and involve politicians, scientists and sociologists; (3) Remittance and Repatriation Factor (RRF) which examines the ability of a country to satisfy their commitments, considering their ability to convert their capital into other currencies.

There are a number of private companies that offer similar risk assessment, including the World Markets Research Center, which contains a Political and

Economic Forecasting Unit services, responsible for a range of intelligence services at the country level. This assesses and forecasts political, economic, legal and business conditions in 186 countries through analysis and special daily reports, country reports, economic forecasts for five years and models for assessing sovereign risk.

According to Prideaux *et al.* (2007), after the Cyclone Larry in 2007, visitors to North Queensland were asked about their sources of information when Tropical Cyclone Larry happened, with over of 43% of respondents noting that information about the cyclone was received through television, followed by other sources of information, including newspapers (19.9%) and friends or relatives of north Queensland (13%). However, domestic visitors showed a higher tendency to have used television, while international visitors had used the Internet in greater numbers. A total of 57.9% of respondents stated that the cyclone did not affect their satisfaction with the trip, or that it had little impact (33.5%) upon their satisfaction. Only 8.6% indicated that the cyclone had a strong impact on their satisfaction.

In a study of Drabek (2000) to compare the perceptions of managers and visitors involved in disaster with repercussions on tourism, between 1991 and 1994, interviews with 603 tourists affected by disaster and 185 executives responsible tourism during an event indicated that tourists often received less information about the disaster by the generalist media and were more alerted by operators and neighbours, and had also received less alert than local residents before the event actually occurs, limiting their ability to find shelter. 40% of tourists interviewed said that warnings were not accurate, and therefore they sought confirmation from the tourism professionals and even tourists when evaluating the risk.

Drabek (2000) describes that people who needed to evacuate their homes, who could do it alongside friends and relatives, improbably had eventually taken refuge in public shelters in the order of 23%, or returned to their homes (20%), or other accommodation booked (18%), while 39% were stuck in traffic and slept in cars, restaurants along the road and elsewhere. Those who had found shelter in public shelters were less satisfied with improvisation (43% of the sample) compared with those who had found residence outside the county (82%), while those who stayed with friends and relatives in another county had levels of satisfaction of the order of 87%, and 65% of people were pleased with the performance of service among those who found residence in the same municipality as the disaster.

Systems and tools for crisis management

To deal effectively with crisis it is necessary to define the decision-making processes and to elect a set of operational experts, who for various reasons should operate in groups. Essentially, this team should be cross-functional, providing inputs for all parts of a particular activity, industry or destination more effectively including issues and problems that may be encountered. Parsons (1996) suggests that an organizational level command with a group of senior executives should be involved, but only one, preferably a senior director, should be appointed as spokesperson.

With respect to the perceptions of senior management in crisis management, Robert and Lajtha (2002: 185) question why are these people generally unprepared? What levers can be used to make them see the importance of this preparation? Why do many of the top managers devote so little time to workout in the management and planning of crisis, when the return on reduced investment could be huge and even commercially lifesaving? Consequently it is not only the strategic planning level that is required, but also training people to operate in a crisis situation. Because the crisis creates psychological pressure, the team may even have to conduct counseling and training to deal with fatigue, stress and fear, all the elements of crisis management. Moreover, the public relations staff should also be trained in terms of crisis communication, which is an important element in the process of managing these events.

Organizations and destinations must possess a pre-agreement crisis or disaster management group, whether at an organizational, local, regional or national level. This group should have a clear idea of the types of crisis and disasters that may occur according to risk and vulnerability inherent to the organization or destination and get a pre-planned response prepared elaborate.

The basic model of emergency management systems follows a strict chain of command and a structured hierarchy with clearly defined responsibilities. In the basic model, the centralization ensures that duplication does not occur and that information is used where it is most needed. However, as Alexander (2000) notes, this model has been criticized for being too rigid and mechanistic, and allowing the occurrence of "hiccups" in the flow of information and decision. As Quarantelli (1988) suggests, coordination, not control, is actually what is necessary and possible,

since, once allowing degrees of freedom to the command structure, it'll be possible to really get benefits in the response phase to disaster.

The alternative to a centralized model is known for a number of different names, such as Incident Command System (ICS), Emergency Resource Coordination Model (ERC), Matrix Organizational Structure of Multi-Agency Coordination System (MACS), or to Integrated Emergency Management System (IEMS). In the alternative model, the coordination occurs by means of consultation and flexibility with task forces created as problems arise. The reconciliation of roles and responsibilities, especially among multiple agencies, is determined by common procedural elements, terminologies and structures in order to improve collaboration (Alexander, 2000).

Delays in responding to crisis or disasters are often attributed to lack of communication, slow response and lack of resource deployment. As Allinson (1994: 43) suggests, crisis or disasters will attack more often the weakest links in an organization, which are often those connections that may limit or constrict the flow of information.

The Kobe earthquake of 1995 is an example of how a delayed response may limit the management of crisis and disasters. Heath (1995) and Van Biema (1995) believed that the government's response to the earthquake have been slow because of too slow decisions on the demarcation of roads, due to the delay of the police vehicles and emergency because of the postponement of decision on the use of armed forces in aid to emergency organizations.

The communication and management of information resources

Communication is a key component of strategic planning and management, along with leadership, organization and control. Crisis communication and public relations are essentially related to the provision of accurate and consistent information both internally and externally, and to improving the image of the organization or industry sector stakeholders before a crisis or disaster. The objective is to manage the negative perceptions and restore consumer confidence, while it undertakes with the marketing of recovery to increase tourist activity. This is because, as Cavlek (2002) notes, a crisis usually survives to physical damage and thus the tourist destination and the industry needs to find ways to manage their disorders.

Sonmez *et al.* (1999) agree that the media are important agents in the image reconstruction and confidence restoration in a destination or organization. However, despite the importance of interaction and dealing with the media, mutual difficulties in management have been observed, it is unlikely that there is a time delay between the onset of any crisis and coverage by these (Ashcroft, 1997). Moreover, the poor relatives of these agents may, during a crisis, severely damaging the long-term viability of the industry for the recovery (Cavlek, 2002).

The emphasis in communications and public relations is vital to limit the damage to the organization in an emergency, which could result in irreparable damage. Cooperation with the media is considered essential, as they provide information to the general public (Berry, 1999), illustrating the need to keep the media informed frequently so that misinformation is as little as possible. Regular two-way communication is the best way to develop a positive relationship with the public (Coombs, 1999).

Sonmez *et al.* (1999: 8) state that it is imperative for destinations to increase their crisis management plans using the marketing efforts to recover tourism and rebuild a positive image. Planning efforts that may be taken before a crisis or disaster emerge. The situational theory is a way to investigate and target audiences of an organization or stakeholders in order to understand them more effectively, and is an important part of developing a symmetrical two-way communication, seeking win-win solutions (Dozier *et al.* 1995). According to Gonzalez-Herrero and Pratt (1996: 83), the situational theory seeks common features in public, such as problem recognition, constraint recognition, level of involvement, search for information, and information processing.

Strategies work best when communication is bidirectional and symmetric. According to Dozier *et al.* (1995), one-way communication emphasizes the flow of information out of the management of an organization to the public, often through press agencies.

In symmetric two-way communication, information is collected on the public to assist management in decision-making, resulting in the transmission of messages by the organization to try to persuade or change public behavior. The symmetric bidirectional communication differs from that in the measure that uses the information gathered/assembled to promote mutual understanding, managing conflict and supporting both sides.

These concepts from the field of crisis communication are important for the development of more effective strategies for crisis communication in tourism. First, illustrate the ability to understand the needs of key audiences, to develop proper communication and public relations strategies with these needs in mind, and to ensure two-way flow of information with the public in order to improve the communication activities. As Dozier *et al.* (1995: 13) suggest, the communicators, practicing two-way symmetrical model, seek win-win solutions to conflicts with the public. Moreover, they suggest that organizational culture and the granting of autonomy to public relations departments are crucial factors that influence the success of the practice of crisis communication. This suggests that crisis communication planning and development of a culture of responsibility "abroad" is a priority for the tourism industry.

The communication at the intermediate stage of the crisis and emergency

Nielsen (2001) proposes a recipe for crisis communication based on two states, 'to do' and 'not to do' in order to deal with the press, which are the most important agents, as they are able to transmit information to a number of stakeholders, including tourists, potential tourists, tourism enterprises and the government. The interaction with the media during a crisis is a key factor in how the news will be presented, may contribute to the final result of the crisis (Stanbury *et al.*, 2005) and help develop credibility.

As Taylor (2006: 172) notes, the various media messages convey an image. This image has an impact on the attitude of the potential tourist. Key issues of a communication strategy for effective crisis were summarized by Berry (1999) such as: (1) the existence of a crisis communication plan, including a marketing plan for recovery; (2) the rapid development and implementation of the marketing campaign; (3) the access to funds for marketing activities; (4) the consultation with stakeholders; (5) the consistency of the messages; (6) the use of messages to correct perceptions of destination image; (7) the honesty and openness (willingness to disclose information).

Communication in the emergency and intermediate phase of a crisis or disaster focuses on the key themes of the speed of response, consistency, openness and honesty in communication, providing access to information to reduce the impact of a crisis or disaster. In essence, these activities provide public relations, trying to create

a positive image and simultaneously influence public opinion, often through third parties (such as the media).

Fall (2004) showed that, about eight months after September 11, the use of tactics of public relations had increased while the advertising tactics decreased, emphasizing the importance of public relations after a tourism crisis of major proportions.

Doing frequent meetings with the media can reduce the amount of misinformation and help decrease the likelihood of emergence of new crisis or disasters (Horsley and Barker, 2002). The very nature of the crisis and the disaster is such that it is often the unexpected confrontation with information and with the lack of immediate information. Therefore, the media never cease looking for sources of information quickly in order to meet deadlines; they may want to fill the information vacuum that causes the crisis.

At the same time, Coombs (1999: 114) says that silence is a very passive response and passivity is the exactly opposite perception to which an organization should strive towards. Minimizing contact with the media in order to distance the organization crisis seems not to be a good strategy. The decision of Pan Am to distance following the Lockerbie crash proved to be a mistake (Regester and Larkin, 2002), while Frisby (2002) recognized that the disclosure of accurate information on a consistent basis was a key part of the response from the British Tourism Authority (BTA) in the case of FMD, as well as in the case of September 11, 2001.

Regular press conferences and other communications are particularly important for the delivery of accurate and consistent messages to the public via the media, and to assist in pressure from various interest groups (such as governments) to finance the marketing recovery. For example, Chacko and Marcell (2007) noted the importance of the communication center of New Orleans as a place where updates were provided in order to deal with "myths"about the impacts of the hurricane.

Web pages can also be used by industry and relevant government agencies to reach specific audiences (media, public, present or potential tourists). A website of "support"in crisis situations can be developed and prepared for launch before the event (Page *et al.*, 2006). Coombs (1999) indicates the need to provide instructional information during the initial response, including: (1) what, when, where and which information; (2) stakeholders should take precautions to ensure safety in order to increase the survival of the activity; (3) corrective actions to be taken by organizations with responsibility.

Massey (2009) indicates that in the three months after September 11, the airlines tried to restore their image and the image of the industry as a whole, using a systematic communication through printed sources, online sources and television ads. They sent e-mails, written columns in industry and in-flight magazines to reassure customers that travel by air would be safe, with the airlines often aligning themselves with the symbols of freedom and determination. After September 11, the Regent Wall Street Hotel in New York published full-page advertisements in leading newspapers showing the facade of the hotel, with an impression of "stars and stripes forever", setting an image of unwavering strength (Knable 2002: 19).

Tiernan et al (2007: 317) note that one of the aspects of the negative publicity that most dominated on the FMD crisis in Ireland was that this occurred at a time when potential tourists are very impressionable and connectable to information, while selecting a vacation destination.

Communication strategies crisis and disasters

According to Ray (1999) there are three available strategies for crisis communication, to enumerate: (1) deny the crisis exists; (2) provide partial, inaccurate, or delayed information; (3) maintain an open communication channels with constituents. The strategy of pleasing seeks to increase or gain public approval for the organization through public relations activities. This can be achieved by strengthening or reminding people of the positive aspects of the organization, transcending the crisis through the site by placing it in a larger and more positive context or finally through the cheer to others for also receiving compliments from them (Coombs 1999).

Henderson (2003) added to the Ray (1999) strategies the factor of accepting responsibility and looking forward, with the awareness that these strategies are not mutually exclusive or necessarily linear. Henderson (2003) found, in the aftermath of the crash of Singapore Airlines flight SQ 006 in 2000, despite the legal consequences, the Vice-President of the Singapore Airlines took responsibility for the accident and expressed his anguish, sorrow and regret for the accident, with a minute of silence and with the company flags at half mast to honor the 83 passengers and crew who lost their lives in the accident.

According to Floyd *et al.* (2003), persuasive advertising is all the communication that can increase consumer willingness to travel. But questions arise before understanding who and how it can be influenced. Certain

demographic groups may be less risk averse than others. Taylor (2006) believes that the persuasive marketing needs to consider specific market segments that would be most likely to respond to such marketing, highlighting two main consumer groups having different needs for information processing and level of involvement in the processing of the decision-making:

1) Consumers of central processing. These consumers formulate or alter the attitude based on a deliberate and concerted evaluation of the facts. They respond well to both sides of the messages describing the benefits and risks, clear statistics and data. Those who are risk neutral and can be convinced that the rescue and safety measures were taken believe that a visit would provide value (Taylor, 2006). This group will be composed of those people who are already considering a holiday destination that is already within your set of choices, therefore, they are highly involved in the decision-making process and seek a level of credible information.

2) Consumers of peripheral processing. These consumers are influenced by messages and general sources that express an opinion, rather than their personal assessment, based on facts and on the perception of value. Marketing could be used to differentiate specific countries or parts of a country that are safe or anything affected by a crisis or disaster (Beirman, 2006). The consistency in updating and strengthening of key messages are vital for this group. The use of opinion leaders, spokespeople, media and celebrities could be considered for this group, which has a low level of involvement, and are possibly in the early stages of their decision-making process.

In the September 11 event, Stafford *et al.* (2002) observed that dialogue and strategies for crisis communication with government officials were fundamental in helping to raise funds for the activities of crisis recovery but also as an important part of strategies to encourage visit, through: (1) issuing executive orders to encourage federal agencies to continue to visit and hold conferences and conventions in Washington, DC; (2) indicating to the State Department to communicate with embassies in order to encourage international travel to Washington, DC; (3) using the cast of the television show "West Wing," and the first lady Laura Bush and other political leaders to promote tourism in Washington, DC. Furthermore, they appealed to President George Bush in promotional actions of the Travel Industry Recovery Campaign in order to encourage Americans to resume travel and visit the United States (Floyd *et al.*, 2003).

After Katrina hurricane opinion leaders and celebrities were used to disseminate reliable information to the public about New Orleans. At the same time, they thanked the public for their support, suggesting that the visit would help in the recovery effort (Chacko and Marcell, 2007). The use of reliable and high-profile celebrities is an example of how may be use a third parties to endorse a message and encourage travel after a crisis or disaster.

Evidence about the use of impartial third parties to market a destination after a disaster can be found in the case of Canberra, Australia, which witnessed a bushfire in January 2003. The development, after only five days, of the Heart Recovery Marketing Campaign allowed the state of emergency to be lifted. Armstrong and Ritchie (2007) observed that the press campaign was relatively easy to achieve, but the television campaign took longer to develop, with the ads to be displayed for the first time only to March 30 (61 days after the state of emergency be lifted) due to complexity in the production of such media.

Although some of the funds for marketing recovery may have come from internal reallocations, such as diverting budgets from international marketing to internal marketing, or through some minor changes to the promotional materials already close to the scheduled production, not all destinations have the resources or time to implement such actions. This requires that the actions of fundraising or pressure take place to ensure adequate for an integrated marketing campaign to recover resources. For example, Tiernan, *et al.* (2007) note that, in the case of FMD, the Irish Government has provided the U.S. 2.2 million dollars for both campaigns recovery and reaffirmation.

The role of the industry and the media in the recovery marketing

Despite appearances in media programs being useful in some situations of crisis or disaster, they could be a waste of resources if not properly timed. Conducting tours with tour operators and the media is useful for developing and promoting messages to key target markets and for industry representatives to observe firsthand the recovery and reduce coverage negative media (Cavlek, 2002).

Potential customers rely heavily on organic images created regardless of local or national authorities, while induced images disseminated by tour operators will also be more credible than the authorities (Cavlek, 2002), especially for potential travellers that process peripheral information. The British Tourism Authority (BTA) in April

2001, brought a group of 40 leaders of the travel industry from Japan, Canada, USA and throughout Europe in order to observe for themselves the impact of the FMD outbreak (Frisby, 2002). This, combined with the organization of the World Travel Leaders' Summit (WTLS) with media coverage, together with television, galas and events programs, and placing ads (in the editorial format), was part of an integrated marketing communications program.

The Maldives also received the visit of the media after the tsunami in order to explain that most resorts were operating and that tourism could help residents restore their lives (Carlsen, 2006). In Taiwan, after the 1999 earthquake, more than 400 representatives of foreign media and large wholesalers of the tourist sector also coming from abroad were invited to visit the earthquake-affected areas.

Chacko and Marcell (2007) explain how the meeting organizers were called to New Orleans after Katrina hurricane through a program of public relations and advertising. The advertising campaign presented photographic evidence of French Quarter scenes before and after the storm (without perceptible difference). Furthermore, a campaign of direct mail was mounted, also for travel intermediaries, showing images of intact areas of New Orleans.

Some events allow a positive focus and may assist in the cooperative work between the public and private sector in the sense to stimulate visit. Although they are not located in the source markets, there are opportunities to join the media and the industry, directly in the source markets. For example, an "Agent Appreciation Week", which was held in five American cities for the Irish Tourist Board at the time of the recovery campaign of FMD crisis, included a trade show with an hour duration followed by dinner and entertainment (Tierman *et al.*, 2007).

The knowledge management and the organizational learning

The definitions of knowledge management vary, depending on the perspective and approach of the authors. According to Malhotra (1997), knowledge management caters mainly to the critical issues of organizational adaptation, survival and competence in the increasingly discontinuous environmental change, and embodies organizational processes that seek synergistic combination of data and information processing capacity of information technologies, as well the creative and innovative capacity of human beings. This definition suggests that knowledge management is

a complex activity involving the integration of information technology and human elements to produce and disseminate organizational knowledge.

Jashapara (2004: 12) provides a comprehensive definition of knowledge management as the process of effective learning, associated with the exploration, exploitation and sharing of human knowledge (tacit and explicit) that use appropriate technology and cultural environments to increase capital and intellectual performance of an organization.

However, it is important to note that knowledge management is not only necessary for individual organizations. As Schianetz *et al.* (2007) recognize, approaches are needed to promote the interest and collaboration in learning on the level of a destination or region, as well as at the organizational level. The authors note that learning is increasingly important due to the dynamics of tourism systems and, in particular, to long-term sustainability. Schianetz *et al.* (2007: 1486) note that an organizational learning approach for the management of a destination help to create a shared understanding of: (1) how it operates as a tourist destination; (2) how the possibilities of the market can be strengthened; (3) what are the requirements for adaptation to changes in the environment; (4) how to promote collective awareness of possible risks and economic, social and environmental impacts; (5) how risks can be minimized and recorded.

The previous points 3 to 5 are related to the way of dealing with crisis and disasters in tourism through the development of a learning approach to advance the management potential and adjust to an adapted approach to strategic management, as proposed by Hofer (1973). As stated by Mistilis and Sheldon (2006: 42), a system with shared knowledge at the destination level is needed to deal with crisis and disasters with all tourism stakeholders involved in its creation.

Knowledge management is increasingly recognized as an important tool that can increase opportunities for adaptation and survival of organizations (Bahra, 2001; Cooper, 2006; Malhotra, 2002; Mistilis and Sheldon, 2006; Newell et al, 2002), and is an important part of identifying, recording and sharing lessons about disasters (Robert and Lajtha, 2002). Although in much of the literature the emphasis is given to creating organizational competitive advantage for development (Davidson and Voss, 2002; Grant, 1996), knowledge management is also recognized, but more broadly, as important for a number of tourism organizations (Bouncken and Pyo, 2002; Cooper, 2006).

The first step in any strategy of knowledge management is to identify who holds important knowledge and what shape it takes. It is important to recognize the difference between information and knowledge (Blackman, 2006; Fahey and Prusak, 1998), since simply moving more information around the system will not be enough.

One way to consider how knowledge of crisis and disasters in tourism can be developed and managed is using the stages of the life cycle of crisis, identifying the actions of knowledge management. Three basic components of knowledge comprise the sequence: preventive planning; plan for disaster management; recovery and manipulation. According to Mistilis and Sheldon (2006), the knowledge base 1 includes most of the knowledge (or information) retrieval and storage, while the second base of knowledge includes information processing, and base 3 includes the dissemination and action based on knowledge management.

Prevention and disaster planning, information and the use of scenarios, forecasts and establishing protocols, are of great importance to the activities of the pre-event phase. The development of policy manuals, crisis control centers and decision support systems are vital for planning actions that can deal with crisis and disasters. However, according to Barnett and Pratt (2000), after the beginning of a crisis, increasing centralization leads to information overload, and decision-makers tend to rely on ancient knowledge based on past experience and look for less sources of information. Furthermore, it is important not only to collect data and information from stakeholders in order to help shape the responses and recovery activities, but also involve them in the development of new knowledge and predictions.

However, two important aspects stand out when examining the work of Mistilis and Sheldon (2006). First, the need to go beyond from the simply activity of collecting information to seek to build new knowledge, that included actions and activities discussed. Second, the need for a stage of knowledge management that included organizational learning and the feedback, in future crisis and disaster planning, which should occur after the recovery.

Organizational learning and Feedback

Organizational learning has been broadly defined in many ways (Blackman, 2006; Prange, 1997). A common trace among the various definitions is to be a set of processes that enable organizational behavior change in some way as a result of new

knowledge that have been developed. The traditional goals of the learning process are the acquisition of new knowledge (know what), development of skills (know-how) and a change in attitude on the part of those who are in the learning process (Jashapara 2004: 61). New knowledge permits the revaluation of ideas and beliefs currently understood and lead to the possibility of change. It could be argued that without the creation of new knowledge, you can never change (Blackman, 2006; Cook and Brown, 1999).

Learning and adaptive management should occur at all stages of the strategic management of crisis or disasters process. As Mistilis and Sheldon note (2006), each step requires a correct knowledge of the pre-crisis stage by the stage of disaster management and the treatment for recovery. However, for an effective assessment and feedback, long-term learning through the actual experience also needs to be captured and understood in order to ensure that: (1) the same errors/problems do not return to happen; (2) new strategies are becoming more and better information provided by an adaptive management. Without learning, the same problem may occur again, even though these may have been supposedly managed or treated previously.

The benefits of hindsight should enable destinations and organizations to develop plans and strategies for crisis management even better and there are some examples of such occurrence. Disaster Management Organisation (DMO) located in Maldives, Charleston, USA, Singapore, Malaysia and South Carolina have developed crisis management plans as a result of crisis and experiences of previous disasters (Carlsen, 2006; Henderson, 1999, 2002, Litvin and Alderson, 2003; Sonmez and Backman, 1992). As mentioned by Pforr and Hosie (2007: 257), the Prevention, Preparation, Response and Recovery model (PPRR) suggests that the elements of preparation, response and recovery of these management models crisis are interconnected, and therefore have a crucial relationship for the purpose of learning.

Learning is thus an axiomatic and critical feature, so it should be recurrent. One of the few studies focusing on organizational learning and feedback in the context of crisis management and disaster tourism was by Vikulov and Faulkner (2001), which tested the framework for disaster management in tourism using the Katherine floods. The authors encouraged the stakeholders to reflect on the lessons learned as a result of the disaster, posing three main questions to get answers that reflected their actions and changes in the organization and destination, as a result of the disaster: (1) based on the benefit of hindsight, is there anything that you or any other partner might have made, and which would have to deal with the situation more effectively? (2)

did the experience of the floods result in any permanent approach change of your organization/agency for management planning? (3) was there any permanent change in the planning and organization of the destination as a whole?

As a result of the study, Vikulov and Faulkner (2001) revised the framework for tourism disaster management in the form that included a reassessment of marketing scheme, planning and policy in the revision phase/resolution. However, there was no discussion of what constituted such review, as should occur with respect to the acquisition and development of knowledge, further noting that stakeholders should have been involved in the review.

Henderson (2003) explicitly notes the importance of organizational learning, including it as a final step in the management of economic crisis, immediately after the resolution phase. Henderson (2003: 281) indicates that the resolution, if only partial, offers an opportunity for review and reflection leading to reforms in pursuit of improvements in structures and systems and a high preparedness for future crisis. Henderson (2003) shows that for the model to work, those involved with the strategic planning and preparation need to review their actions effectively in order to make new choices. Although organizational learning is explicitly employed in the model of some authors (Faulkner, 2001; Henderson, 2003; Ritchie, 2004), it is clear that the wider processes of knowledge management can help organizations develop the best responses and crisis or disaster plans, in a way that would be beneficial for organizations and their respective stakeholders.

The differences in the nature and extent of organizational learning can happen due to local cultural context, organizational culture, and perhaps even because of the way learning and reflection are managed by organizations. Defensive organizational culture routines can also inhibit learning. This phenomenon can be described by Argyris and Schon (1996), which refer to as single-loop learning, where the values and norms that underpin a strategy or action are left unchallenged and unchanged, preventing the organization learn from his mistakes, eventually leading to failure. As a result, they advocate double-loop learning, which will promote inquiry and challenge existing assumptions and actions, leading to the use of new theories/ideas.

Blackman, Connelly and Henderson (2004) argue that double-loop learning is crucial and leads to better prediction and can be applied to tourism crisis and disaster management. In particular, the concept could be applied to how the disaster management organizations and the industry evaluate tourism crisis and the activities facing the disaster. As Faulkner and Vikulov (2001: 343) suggests, closed-loop

learning emphasizes the importance of a fundamental reassessment of destination management and planning approaches in the post-disaster phase if the lasting positive effects can be accented and the negative enhanced. However, reassessment of the response to the crisis in destinations should not be simply an internal process, but a process that involves all parties, as well as being as important as the implementation of responses (to the crisis and disaster) and therefore they should be provided with relevant resources.

Pforr and Hosie (2007: 258) argue that organizational learning resulting from the double-loop learning is a complex task that to be reached requires time and dedication of all concerned. The deep organizational learning is more likely to happen when there is a constant iterative design of learning opportunities on crisis management. The creation and maintenance of an appropriate organizational setting will help embed a culture necessary for a prompt response on the organizational level.

In organizational terms, the difference between single-loop and double-loop learning is the difference between responding to a problem carried out through a predictable procedure, versus to consider why the problem is occurring, capturing understands for future use.

Conclusion

In the first part we exposed the problematic of crisis and disaster. We noted the interrelationship between the two situations and explain how the domino effect could turn a crisis into a catastrophe or vice versa. Alongside this, we described the type of crisis and disasters and the existing effects they may have on the specific case of the tourism industry, with particular emphasis on the major natural/technical disasters and political and economic crisis. In the course of the discussion, it was evident that the decision-making of consumers can be highly conditioned by the impact of crisis or disasters on organizations and society.

We talked about a movement in crisis and disaster management to the prevention and planning, suggesting a growing awareness of the impact of natural hazards, extreme weather events, disasters and crisis in society. Far from ignoring crisis, disasters and global environmental change and simply view them as a threat, managers must strategically plan for such a change, identifying and understanding,

developing and implementing management plans, and evaluating the success of these plans toward a planning more effective in future.

We exposed the anatomy of a crisis or disaster and identified and discussed the lifecycle of such incidents. Understanding the processing time of an event of a crisis or disaster was evident, and exposed the difficulty of predicting or responding to crisis and disasters since each event often has different characteristics, and it often seen as impossible to control. The discussion evolved around the debate on chaos and complexity theories as another perspective of perceive crisis and disaster management.

In this approach we advocate an understanding of the management and strategic planning as crucial for dealing with crisis and disaster activity. The concept of management and strategic planning were outlined, as well as discussions on strategic planning and management perspectives were presented, subjects were exposed and discussed, such as strategic analysis, choice, implementation and control, and the link between planning and management functions.

In prevention and planning we evidenced the role of organizational strategic planning to prevent or reduce the possibility of crisis, and the role of disaster reduction and mitigation. Although forecasting techniques can mean higher or lower probability of occurrence of crisis and disasters, they are limited in relation to the provision of immediate impacts, including economic and political crisis. Despite the growing threat of global environmental changes and natural disasters for organizations and tourist destinations, these are hardly, if at all, prepared to deal with the impacts of such threats, defending that the planning of crisis or disaster should be a core competency from the managers of the industry. Key literature on natural hazards and disasters and in the field of emergency management was likewise delineated in order to consider at the time of choosing the best practices to reduce or mitigate these disasters.

Understanding risk and vulnerability and its wider connections to more sustainable development is vital. When prevention or mitigation of crisis and disasters is not possible, then contingency plans should be developed and tested to deal with these incidents on the organizational and destinations level.

We noted the problem of identification from a number of sources, including the external environment, trends in the organization and their performance trends. As the perception of loss and probability combine to create a threat, lack of information, time pressure and lack of control drive a problem into a crisis. Thus, we identified the

forecasting techniques and gathering information that can be used to help predict or assess the likely impact of incidents and events that may evolve or derive, if untreated, in crisis.

In discussing about the response to crisis and disaster, the focus in highlighting the importance of image and the effects that crisis and disasters can have on the consumer in the decision-making to select the destination was evolved. In particular, media has an important role to play in crisis communication, and marketing perceptions of the management and recovery. Media can also encourage the flow and intensity of a crisis or disaster, or even help turn an incident or problem in a crisis due to their special attention to negative coverage.

Finally, we present the knowledge management and organizational learning as a result of crisis and disasters with a focus on recovery and resolution of crisis and disaster. We evidenced the imperative for knowledge management and arguing that knowledge is essential to the survival and adaptation of organizations in order to face crisis or disasters, as well the recognition of different types of knowledge and their requirements throughout the lifecycle of a crisis or disaster for the acquisition, storage, distribution, interpretation and action before knowledge. Following this approach, we argued that new knowledge permits the revaluation of ideas and beliefs currently understood and leads to the possibility to learn deeply, and change in the future.

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Towards a new information-documentation professional: competencies and atitudes required for the brazilian labor market

Waldomiro Vergueiro
Jose Antonio Moreiro González

The professionals of the Information and Documentation field are in permanent change, due mainly to the Society of Information own characteristics. This is connected with the rhythm of the technical tools they have to use. The job role within the information centre has diversified and the profession is not limited by the physical space, opening itself, with frequency, to decisive areas, such as managing, communications and computers (FORREST, 2008). That is happening in such a way that the professional tools used by the disciplines of the information field get old in a small time frame, forcing the professionals to worry about their own lifelong learning if they wish to keep competent in the roles their profession demands. The Society changes quickly and to some areas of knowledge the change is faster.

This situation supposes a redefinition, almost continue, of the information-documentation sphere that, in some ways, impact the educational programs. This situation also expects a new academic culture, leading the universities to adapt, not only on what regards to administrative systems, but also of teacher and students. It aims converging the teaching of our courses with the social roles we should play, with the study that moves us and, therefore, with the reality in which we work. Nothing is more dangerous in the higher education than the profound dissociation with the social and professional reality, though we must be prudent in regard to the changes,

as they can sometimes be uncontrolled. We are certain that the studies programmes taught at the universities prepare well the documentalists on what is fundamental to the professional requirements. However, they do not guarantee the total performance of activities required by their companies or public institution. And some of them have such strength in the work that it is convenient to follow them.

Using the methodology of semantic management of knowledge, a joint project between the Universidade de Sao Paulo (USP) and the Universidad Carlos III de Madrid (with FAPESP'[1]s aid) was developed, aiming to ontologically organize the competencies and abilities required from those who choose the work vacancies offered. In order to do that, it was firstly necessary to identify and analyse a sample of 200 job vacancies offered on line by Brazilian companies during 2010. The advertisements were exclusively related to jobs in information-documentation within companies or institutions. The sample serves as an example to the data mining (APPLEGATE, R., 2010) and its analysis is being amplified to more 1800 institutions. This chapter presents, therefore, the first sample of results reached by the data collection and the analysis of aspects offered by this data.

In order to carry out the taxonomy of competencies, it was necessary to classify and establish the hierarchy of the requirements made by these advertisements. For this, the following objectives must be fulfilled:

- To select a corpus of advertisement found on the Brazilian Web
- To work with the concepts presented on them
- To identify the hiring requirements from the companies
- To define the occupational components and the new profile required

The descendent method (JAGERMAN, 2006) was followed in order to generate the taxonomic classes. For that, it was necessary to rely on a classifying structure, to which the concept to be aggregated has been associated. This taxonomic structure was initially composed by the descriptions on the syllabus of the Library Science Course of the Library and Documentation Department in the Escola de Comunicacões e Artes in the Universidade de Sao Paulo (ECA/USP), together with the syllabus

1 Foundation for the Support of Research of the State of São Paulo, Brasil.

that outline the eurocompetencies in Portuguese (INCITE, 2005). Afterwards, their expressions were revised having in view the Brazilian spoken Portuguese.

For this chapter, the vocabulary from job advertisement (STARR, 2004) was manually extracted by a process of search, identification and standardization from the occurrences. The knowledge identification required by this kind of advertisements followed Cloonan-Norcott (1989) and Brimsek (1991) proposals. Having as a standard the first taxonomic structure, 200 job offers advertised on the Web during 2010 were selected: Catho: http://www.catho.com.br and Lybryain Portal: http://portalbibliotecario.com.br.

The search was made on the professional profile advertisements in which the terms librarian, archivist, museologist and documentalist appeared. Only selected those with tasks description and competencies were selected. All synonyms found were accepted, for they express a concept (CARLSON-NIRENBURGM, 1990). The sample analysed was enough to generate data that allow a first projection of the required competencies and abilities.

During this process, the orthographic correction was checked and the blank spaces were eliminated. The normalization of the entries in the field of description was revised as well. From this, only the relevant information was considered.

The most required competencies

By selecting all the similar terms on the job offers, it was possible to transfer all the taxonomy of the information. In this manner, by relating all the synonyms with its chosen term, the future automatic recovery was prepared in order to reach a good precision (Z39.19: 2005).

A first statement leads us to define that the job practically extends to all sectors of activities (QUINT, 2009). With only 200 advertisements, it was possible to identify 23 sectors, which presented 75 different descriptions of companies. The descriptions go from the food industry to fast food restaurant, passing by a diverse range of services, human resources, building and even automobile pieces replacement. The number of jobs offers in Education/Languages stands out, reaching 23,5 %, a reflex of the weight of private schooling in the Brazilian educational services. The demand on Computer and Data Processing area is also well represented, a sector from which comes 19% of vacancies, and the Service Provider companies, 16%. Around 10% were offered by

Human Resources, while the grouping of Legal / Audit / Consultancy branches had 7% and Health 4,5%.

Table 1 – Experience requirements

TYPE OF COMPANY	Nº OF OCCURRENCES
Archives	53
Libraries	59
Documentation Centres	21
Museums	4
No experience required	15

Source: Authors

The need of experience to get a position is required in 53 occasions to the Archives, not only general, but also to company's files, law offices, health offices and including experience on Window's tools of archiving. On Libraries, it is a requirement 59 times, not only for the professional practice but also for different tasks, functions and jobs. The school libraries case stands out greatly. Many times, having worked on law offices is also a differential. As well as to be familiar with evaluation procedures from the Ministry of Education and Culture, to have experience in normalization, administrative area or the electronic documents management. Experience in Museums, both on administrative and pedagogical areas, was requested only four times. In Documentation, it appeared 21 times. As it is a more recent activity of the sector, it offers a bigger range of names, as Computer and Knowledge Management, Taxonomic and Semantical techniques, Identification and Modelling of business process, and even Documents processing Operators. In view of these comments, it is appropriate to consider the importance of the experience for the new graduates, as they should have the largest baggage possible from previous jobs when answering a hiring process.

Most highlighted knowledge

This chart aggregates every entry in a whole taxonomic class. The term that defines this class is the one shown here. In each one, the most concrete and specifics activities, knowledge and tasks are considered.

Table 2 – Most requested activities, knowledge and tasks.

	ACTIVITY CLASS	Nº OF OCCURENCES
> 60 occurrences	Attention to clients and users	88
	Acquisition technics	84
	Digitalization	64
> 30 occurrences	Organization/Conservation/ Preservation	57
	Legal-administrative context	54
	Information provider	38
< 30 occurrences	Information elaboration and diffusion	29
	User training	25
	Human resources management	19
	Commercial technics	17

Source: Authors

Here a mixed activity between the traditional techniques of the information system and the news tasks that put the profession as an information provider, mediator in the communication processes, responsible for institutional image and communication and also with direct action in training activities and even marketing processes stands out. The commercial knowledge is a profile that appears significantly in the study, being present in the own commercial Techniques, but also on Customer Relationship and Information Providers.

The common technical activities plus the different expertises of the sector occupy much of the most requested roles, in special the ones with customer and user relationship. If we add the user training activities to them, they reach an extraordinary importance. This is demonstrated by the fact that the whole range of entries regarding customer and user relationship reached 88 occurrences. It is very logical for them to occupy this spotlight, as it can be understood that, as we are dealing with companies and institutions' advertisements, providing good customer and client services is fundamental. They aim to ensure the relevance of the product information they need or that the search engines are used properly; therefore, it is essential that the professional has domain of the resources and services evaluation techniques, as well as ensuring the quality of services provided (19 occurrences). To these, the 25 requests for user training in information abilities can be added, in many cases dealing with recovery and representation of information skills, so that it can be transferred to teaching and research activities (as advocated by Tiana, 1997). There is no doubt of the importance for the organization of training its members on the use and management of information. But also of the customers and external users. The impact on the information units demands a continued improvement of our professional practice and commitment to the user in acquiring new abilities and dexterity in the search and comprehension of information.

We are entering the marketing research filed, for it relies on the sales department to solve any customer doubts, but also attention to those requesting information through the service points, to meet the request of information regarding services offers. Directly, the commercial techniques appear in 17 occasions.

Behind the block of attention to users appear, with remarkable presence, the acquisition techniques, possibly by being one of the most requested items on the library professional offers. Soon after follows the activities of collection digitalization. The need to digitalize affects all kind of companies and all preservation, treatment and information transmission techniques. Therefore, its significance on the professional roles presents an undoubted expansion.

On a more technical character is the section that aggregates tasks as Organization, Conservation and Preservation (coinciding with Heimer's, 2002, statement). Also relevant is the occurrence of the legal and administrative context of the professional activities, which integrates knowledge on structure, operation, mission, policies, objectives, products and services of the information units.

Another prominent requirement is the preparation for the management of human resources, characteristic of higher levels of responsibility. To associate the strategic vision with and excellent management of human resources appears to be a desirable approach. The strategic vision, associated with industry knowledge and market intuition, is the only way to define which qualification and capacities will be needed in the future. Besides, it will be necessary that the organization get well acquainted with each person capacities and on how to relate the human resources investments with the necessary ability and knowledge. It is possible to note, therefore, that the future of information professionals will depend on the value they can aggregate to their institution (as defended by Barden, 1997). So they must be very skilled on:

- Technological abilities and management of information systems.
- Close and effective attention to users needs.
- Storage, management and recovery of information sources.

In order to fulfil this last, broad operational level requirement are the companies' demands regarding process management, evaluation, selection, cataloguing and description, classifying, organization, circulation and loan, indexing and abstract. Each one of this process is set by the kind of company performing, with own norms and differential treatment while dealing with archives, libraries, documentation centres and museums.

Table 3 – Technical processing

TECHNICAL PROCESSES	
Document evaluation	73
Cataloguing	37
Classifying	68
Organization	73
Circulation/Loaning	41
Description	7
Management	73
Indexing	47
Summary	11

Source: Authors

This table meets the requests for more concrete tasks, with a striking presence of professional operational techniques. The entries show an immediate relationship with the undergraduate course syllabi in their attention to technical disciplines. They are the base of the professional structure, as they grant the capacities stated with the documentation process.

On the Information Technology scope, the most required knowledge was about Automated information system. Together with knowing how to handle data automatically in different technical processes, the technical abilities and the knowledge of the technological tools are appreciated in order to master the technological environment and transformation processes. Hence there is the need to know how to disseminate information in the Internet and how to organize it in data bases. These abilities also require the domain of multimedia techniques, or rather, knowing how to navigate through the communication network and to have a profound knowledge of norms, formats and standard description methods, presentation and transmission. In conclusion, it is about managing the content and edition of online data bases, not only in the Internet but also in the Intranet (MOREIRO, 2009). We should not forget that the professional technological environment requires knowing how to apply the documentation Software, with reiteration on the case of the Pergamum programme.

Table 4 – knowledge highlighted in information technologies

INFORMATION TECHNOLOGIES	Nº OF ENTRIES
Information Systems	78
Documentation software	24
Data base	20
Web design	11
Programming languages	8

Source: Authors

If we relate these requirements with the abilities in office software and with resourcefulness working with Programming Languages, one can clearly see how there is more weight on computer knowledge, each time requiring more than one would require from an ordinary user. Accordingly, it is particularly meaningful the presence of eleven requests for knowledge about "Techniques of Web edition". In

fact, taking charge of content management and its positioning on the web requires a constant commitment in updating, as its visibility immediately reflects on the company or entity, which is represented in the chosen architecture and exposed content. We believe that the occurrences of cases in this section is still scarce, as it can be deduced from this results of this project on the Spanish case, in which it was the most required task, and reflects the profile of activities strictly related to computer tasks (MOREIRO, 2009). Maybe we are leaving some areas of activities (Web Arquitecture, SEO…) to computer experts. We see these areas with a negative attitude, when in reality they are straight connected to our tasks as they are about creation, maintenance and knowledge updating. There are border lines in which we will always compete with other professionals and we must do it boldly, as long as we have the required preparation.

Instrumental attitudes

They are about skills and abilities belonging to those who apply to one of the job vacancies (RUÈ, 2007). They embody the "ability of analyses and synthesis", with a rare presence of only four entries in all advertisement corpus, as well as the "ability to organize", which is requested in ten occasions, and "ability of oral and written communication", with such level or importance that it appears 19 times.

Without doubt, the advanced technological knowledge and domain in other languages, besides the domain of the technique, allows the salary to even double in relation to other job offers.

Regarding to foreign language knowledge, it is important to point the mastering of the English language. Its occurrence is three times higher than those of Spanish. The correct use of English has a definite result when choosing the best salary and job offers (already proved by Duarte, 2010). If expressing oneself in English has become a common requirement, to master it is conclusive in order to reach the most desired vacancies. If, besides that, it overlaps with an advanced Spanish, the advantage is even higher.

Table 5 – Better paid placements

COMPANY TYPE	Nº OF PLACEMENTS
Computer and Internet companies	5
Law firms libraries	4
Higher education libraries	2
Human resources consultancy	2
High school libraries	1
Printing Services (high knowledge of computers)	1
Clinical archives	1

Source: Authors

Half of these placements require experience on activities and service to be performed; three are on management and coordination, as well as two on technological systems. The knowledge on Programming, Web designer or command of technical systems, together with other requirements on technology of information are a safe haven for any company. Even so, a good knowledge of business management is required on four cases, on three research and project coordination and development, and one even requires a high level on technical exercise (as noted before by Fallis, 2008). On seven occasions, the competence on coordination and supervision of technical process is required, as well as knowledge on international norms of the sector (OLIVEIRA, 2006). Much importance is given to oral and written communication abilities, as well as the mastery of foreign languages, in a way that, among the requirements, repeats the mastery of oral and written Portuguese or Spanish, with English standing out. And sometimes notions of English, Spanish or French are required. Actually, one of the vacancies is for a "bilingual Librarian".

Previously, computer abilities were mentioned. Their presence is high and diverse. Good computer knowledge is appreciated on 63 entries on this aspect, but there is also one related with specific products, as Prolink, Excel, Adobe, or the Windows package.

Regarding the personal competencies, the "Ability of interpersonal communication"stands out among the advertisements, with twelve occurrences. Following comes "Training to pedagogical actions", with nine, and "Group work", with six. On the case of systemic competencies, "Initiative"appears eight times; "Customer attention and "Leadership", three; "Creativity", two; and "Flexibility"appears only once.

Final considerations

The job offer for Information-Documentation professionals may come from any business activity or institutional sector.

Many advertisements require experience from the candidates. This requirement can be related to previous jobs on archives, libraries or documentation centres in general, or specifying the specialty of the centres, as well as tasks and activities for which there are previous knowledge.

If we evaluate the requirements shown on the analysed advertisements, the main competencies that students should acquire while in University to graduate with an accepted level of professional activity can be deduced.

The technical preparation allows carrying with ease the activities and tasks proper to the sector. In this sense, those that have to do with attention and training of clients and users, with acquisition techniques and with digitalization processes stand out. In special, the treatment and management of digital support has occupied a broad space on the advertisements, which allows the conclusion that it has to be seen as of higher importance by the undergraduate programmes. Another notorious group approximates tasks of Organization, Conservation and Preservation of archives. The same happens with the knowledge on legal and administrative contexts of the profession. With the same importance as ever are the techniques on information treatment, as cataloguing, description, indexing, abstracting, classifying, archiving, management and collection development…

Information technologies are indispensable, as tools and processes. Regarding them, from the mastery of office system to an advanced use of technology are required, with clear advantage to the automated services and programmes related to information systems. The importance to design and creation of web pages also stands out, as well as to have a noteworthy level of Internet user or to be an expert in the

creation, management and manipulation of data base, with the presence of concrete technological environment.

Knowing about business organization and management is another decisive factor, not only for the management processes and human resources tasks, but also for effective organization of the information units, as well as to actively integrate them into a company's management. The work on the Business Documentation Centre and on project management stands out, for which it is necessary to master the techniques of project presentation and elaboration. A new manager professional appears, sometimes as an intermediary on the information and communication process, with direct participation on the companies management and on the activities of education and training. The strategic vision, associated with the knowledge about the industry and the intuition about the trends of the market, seems to be the only way to identify which qualification and competence is needed in the future. Due to the expertise on the developed activities, the candidates need to have specific knowledge of pedagogy, law, economics, health...

A group of aptitudes from human relations, social attitudes and interpersonal communication can be noted, as the communication ability, the ease on public relations, the mastery of oral and written expression, as well as the knowledge of foreign languages, especially English. Other specific aptitudes and creative abilities that mark the suitability to the jobs offered are mentioned as well.

The advertisements presume that the candidates possess a series of qualities acquired among the basic competencies from their university courses, but, beyond that, they request, in general, a good handling of technology and adaptation to its evolution, as well as knowledge of office system and its regular software, experience on concrete technological environments, a high cultural level in accordance with someone who attended university and, with increasing requirement, a good mastery of languages.

An important demand for more peculiar aspects of our profession, aspect that comes from its social application character is not observed. In fact, it is strange not to find a greater representation of social and political competencies, which reflects the function the systems of information must fulfil promoting education, culture and development. It is scarce, therefore, the demand for those attitudes of sensibilities in relation to a behaviour regarding the community to be served, of professional ethics and social commitment, which the world seems to demand, as identified by Valentim (2000). On the contrary, there are references to responsibility and to team work.

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The notion of competence and its implication

Manoel Pereira da Costa

Before the commitment, there is hesitancy, the chance to retreat; a permanent ineffectiveness. In every act of initiative (and creation), there is one elementary truth that destroys the ignorance of many ideas and splendid plans. The moment we committed in fact, providence also acts. All sorts of things occur to help us; things that otherwise would never occur. A whole chain of events emanating from the decision making, all type of meetings, unforeseen incidents and material support come for us, that no one could dream that would come in your way. Whatever you can do or dream you can, begin it. Boldness has genius, power and magic in it. (Goethe) The purpose of this chapter is to seek understanding of competences in arrays of references of behaviorism, functionalism and constructivism.

The purpose is also to check the correlation between the models in the world of work and the notion of competence, and in the end, show that competence is broader than qualification. The questions that guide the reflection are Do the goals of teaching aim at social efficiency? To what extent? How can one overcome objectivism? How can one shift the focus of educational processes of content to the learner?

The second block of questions abides the correlation of the meaning of competence and its linkage to Taylorism, toyotism, neo-Taylorism and holism, how

does competence manifest in each of the models? The third block: are competence and qualifications identical semas? How are they different?

In the world of education, professional education sheltered competence. But the meanings and the plasticity of the notion of competence allowed it to adapt to several contexts. Tanguy (1997, p 38-39) observes:

> The union with the notion of competence was made more easily in school environment because it already seemed naturalized by diffusion known by other media, and because its plasticity allowed each one to prevail a shared care of change on differences of pedagogical design.

The ambivalence of this notion is undoubtedly the origin of specific transpositions or applications, sometimes far apart from the Chart, which were made in different degrees of education (general secondary education, technical and vocational) and on the disciplines themselves [...]. Moreover, in general education, as well as in vocational education that preceded this field, the notion of competences and those associated with it (knowledge, savoirfaire, goals) is accompanied by an explanation of the activities (or tasks) that they can materialize and understand; This explanation that shows the impossibility of giving a definition to these concepts separately from the task in which they materialize. This is because the "abstractization", which underpins its social use requires in practice the opposite operation: its translation in a list of elementary tasks.

This vision of a list of elementary tasks refers only to professional training, because, as will be seen, it complicates the middle level technical skills and in higher level technological ranks.

Competence: Learning and Cognitive Processes

According to Ramos (2002), there are three main methods of arrays of references of competence research: the "behaviorist" 6 (Skinner, Bloom and Mager), predominantly used in the United States; the "functionalist" 7, which has become hegemonic; and "constructivist" 8 (Piaget), of French origin. Next, we will see the deepening of these matrices.

The behaviorist trend considers that the use of the notion of competence is due to the need to clearly express teaching objectives in terms of observable behaviors and practices. This association would be founded on an homology between operational training goals and operational objectives of production, fed by a psychological culture dominated by Skinner's behaviorism (1970), pedagogically appropriated by Bloom (1984) and Mager (1974).

In the mid-1960s, the United States, it is argued that traditional academic exams did not guarantee either job performance, nor a successful life, postulating the search for other variables to predict a certain degree of success. Bloom (1984), in his article "Learning to Domain", stated that 90 to 95% of students would have the possibility of learning everything that had been taught, if they had been offered conditions for this and since teaching was guided by three behavioral objectives: thinking, feeling and acting, grouped into cognitive, affective and psychomotor areas. Ramos (2002, p 89-90) points out that:

> The behaviorist matrix of work analysis arises from the same behavioral structure that is born in the United States through Skinner in psychology, and Bloom, Mager and others, in pedagogy that spread to different countries and fields. It keeps strong relationship with the purpose of social efficiency and manifests more strongly, also in the United States, in developing a generic model of managerial competence.
> Competence is defined as the background characteristics of an individual who holds a causal relationship to the actual or superior performance at work. The actual performance is a central element competence and it is defined as the way to achieve specific results with specific actions in a given policy context, conditions and procedures of the organization. Skills are characteristics that differentiate superior performance from an average or poor performance. Those characteristics necessary to perform the job, but do not lead to superior performance, are called minimal skills. The behaviorist analysis begin with people who do their job well according to the expected results. Passing the scope of managerial skills for workers in general and following some of the principles of the behaviorist analysis, in the early 90s in the US, a report was written on the changes that the schools for young people should make, in order to leave them better prepared for the challenges of competitiveness and productivity of the near future, as well as to set the training and retraining agenda of workers for outposts of the future.

Teaching objectives, therefore, express how theories about human behavior developed by Skinner (1970) were initially appropriated by pedagogy. For this author, the notion of behavior is indistinguishable of its mechanisms of installation, mingling with the domain knowledge itself that would structure the behavior. Bloom (1984), an educator, whose work was based on Skinner studies, defined the goals as the explicit formulation of methods aimed at transforming the student behavior; in other words, the means by which they will modify one's thinking, feelings and actions.

Mager (1974), in turn, tries to move away from behaviorism preferring the notion of performance rather than behavior. For him, the goals of education are unconcealed actions, described in details. A useful purpose is defined by performance (what the student is able to perform), the conditions through which the performance must elapse and the quality or the level of performance considered acceptable. The main problems detected in conductivism, resulting from the analysis of Mager's theory are: 1) reduction of human behavior to their observable appearances; 2) the reduction of the nature of knowledge to their own behavior; 3) consideration of human activity as a juxtaposition of behaviors whose acquisition elementary obey a cumulative process; 4) the concealment of the question about the effective learning processes that underlie behavior and performance: the contents of capacity. The behaviorism supports, then the first curriculum studies conducted by Bobbitt (1972) in 1918, which, in the name of economic efficiency, transfer to the school work the Taylorist-Fordist organization principles of industrial labor in the form of logical principles of Tyler (1971) for curricular organization. From this perspective, the curriculum took based on the shortcomings of individuals, in order to overcome them for the benefit of the rational and efficient work development. Occupational analysis methods used for curriculum development training originated from these patterns. These standards are based on the pre establishment of objectives, selection and direction of teaching situations and accurate assessment of learning. In other words, education was directed and controlled for purposes, which were out of it, as the economic needs of capitalist production. The economics of education and human capital theory consisted in a precise economic systematization of how and why scientific production of human resources fit perfectly, in a socioeconomic context of full employment.

The functionalist tendency is to attempt to analyze the association between skills and goals from the perspective of overcoming behaviorism. The analysis in this case is concerned not with education in general, but with adult training, noting that, unlike those in initial formation, the adults resort to new training period due to

the explicit requirements of their social and professional action. Thus, the formation guides to the purposes, and this process appears as a production process of needed capabilities to carry out social and professional activities, which learners will exercise at the end of their training.

It is inferred that the formation must necessarily produce effects related to the trainees' future activity. This activity mobilizes skills or competencies that the training can and should address, and those become, thus, the trainees' own goals.

Malglaive (1995), however, makes a distinction between the perspective adopted in America and Europe about the goals, considering that European pedagogues have been much influenced by Rousseau and even a literary or philosophical psychology, focusing more on the person, than by a behaviorist psychology.

It also considers that the source of many misunderstandings or misconceptions later about the goals were due to the abusive use in relation to the sphere that, effectively, they complied with: the evaluation.

Malglaive (1995) also considers outdated the matter of objectives definition due to the evolution of the work as the advent of Cognitive psychology. In this new context, the notion of behavior, previously confused with content capacity, would lead to competence. According to him, the notion of goals in education have evolved from normal control of the knowledge acquisition to the settlement of training content sorted by activities – most often professionals – for which they are supposedly prepared.

Perrenoud (2002) is less emphatic about the possible overcoming of problems concerning the definition of objectives. He does not believe that the tradition stemming domain pedagogy approaches are absolutely overcome, but their excesses – brief behaviorism, endless taxonomies, excessive fragmentation of objectives, organization of teaching by purposes, among others – were controlled.

Therefore, talking about competence might not add much to the idea of objective, once it is possible to teach and assess for goals, without worrying about knowledge transfer and even less, with their mobilization in complex situations. Or, as stated by Malglaive (1995) himself, it is possible to describe a set of actions referring to the underlying competence without asking how it works. That is what ends up happening when you try naming, classifying, counting the competences by adding to the verb "to know" or phrase "be able to" an expression featuring an action or set of actions. This would designate, in fact, an activity and no ability or competence.

Consequently, it remains open to question what they should the students acquire in order to be able to do what you intend them to do.

This question has been considered by Malglaive (1995) for what he calls dynamic capacity structure. This is based on the idea of "knowledge in use" understood as the action of thinking about the knowledge that guides material or symbolic action, structuring of new knowledge. The knowledge in use include formalized or theoretical knowledge and practical knowledge. The theoretical knowledge – which, from the reality sets what is – invested in the action unfolds in technical knowledge – that defines what to do – and methodological knowledge – how to do.

The notion of competence and its various implications

The practical knowledge is action generated knowledge, not formalized, better expressed through deeds than in words. It relates to the first, but it is not limited to them, and may be of tacit order.

The grouping of both knowledge, then, would structure the skills or competencies, whose dynamic aspect is in mobilizing these knowledge with practical intelligence, which directs investment of the knowledge in use in the action, and by a formalizing intelligence defined as the autonomous action of thinking about the knowledge in use, away from the action when the breadth, pace and duration of the work of thinking required for acquisition of new knowledge is incompatible with the time of action. Therefore, while practical intelligence is performed from the action, formalizing intelligence is the process by whereby develops abstract thinking and questioning.

Competence, as conceived by Malglaive (1995), relates to the that Zarifian (2001) calls the last-level competencies or competences resource, or is, the more stable and durable attitudes one learns, in the face of real and social life, that could sustain more specifically professional skills.

The constructivist trend represents the dynamic structure of competence in perspective of overcoming behaviorism. It incorporates the idea of the constructiveness knowledge, based on Piaget's (2002) theory of equilibration, by which one understands

"unbalance" occurs when the subject is faced with unknown or challenging situations. Facing a structurally disturbing imbalance, the student reorganizes his thinking on a higher level than previously achieved in a recursive process leading to an indefinite growth of knowledge in quantitative or qualitative terms. Competences, therefore, are the structures or mental schemes that account for the dynamic

interaction between the individual's prior knowledge – built upon the experiences – and formalized knowledge.

Understood as a subjective attribute, competences would require the focus shift from the educational processes of the subject matter to the learner, creating the possibility of an effective and continuous transfer of cognitive acquisitions. This is when it becames so important to acknowledge the theses on meaningful learning that highlight the relevance of all kinds of cognitive acquisitions, from expertise and formalized knowledge to tacit knowledge.

Constructivism, with its various nuances, constitutes as the contribution of psychological teaching of competences that also presents socioeconomic purposes, arising from the recognition by society, of competences acquired in the individual's professional life. It is worth noting that the psychological pedagogies, of which the constructivism is a contemporary expression, apply to both intra-school processes of teaching and learning, as to more global processes of educational activity justification and organization, in various expressions, strongly compounding the contemporary educational discourse.

One of the principles of constructivist methodology, that aims to regulate the acquisition of competencies consistent with the required skills, is that individual training only makes sense in a collective training. Ramos (2002, p. 95) notes:

> Therefore, supposedly the definition of skills and training must be carried out according to a participant research. It is also understandable, that, the involvement of unqualified personnel resonates in the evolution of their own behaviors. The identification of competences and goals of the work begin by identifying and analyzing each organization's specific dysfunctions.

The definition of required competencies and the prospect of training allow the generation of an environment of fundamental motivation for learning. It is perceived, then, how much this pedagogical theory gives too much emphasis to the subjective aspects of students, especially those related to learning, neglecting all the historical and social determinations that focus on education, promoting a certain depoliticization of the entire training process and social inclusion. Therefore, as the focus of the educational process is the subject, their design and personality, for the adaptation and social instability, it becomes evident a concept of men as natural and biological beings, facing themselves and their survival.

The criticism, then, affects the disciplinary compartmentalization of knowledge and as consequently, the pleading of a curriculum that emphasizes the practical experience of the subject as meaningful learning situations. Because competence involves solving problems or achieving results, it is argued that the teaching of skills could promote the opportunity to convert into a full school curriculum, blending problems in general knowledge, professional knowledge, life and work experiences that are usually treated separately.

From the viewpoint of pedagogical relationships, the constructivist epistemology presents a model that, besides rescuing the importance of the poles of the relationship, achieves its own dynamics in the knowledge process. The support of this model is in Piaget's genetic psychology (2002). According to Moraes (2003, p. 94), the perception of the conceptions and concrete meaning occurs in the constructivism, as expressed below:

> To the constructivism, knowledge is constituted by the interaction of the individual to his environment, by force of his action, the capacity to act, thereby recognizing existing dialogue between the individual and the environment, the existence of the being dependency in relation to the environment, that is, contextualism. This dialogue is part of Piaget's theory of knowledge building in which man is seen as a living organization, an open system that, although it has a structure of self-regulation, self-organization, inherent, is by no means a self-sufficient being; it is inserted into the biological environment in which they live and with which interact.

This self-organization will allow autonomy of the subject of learning to learn. This means that the on constructivism the individual reflects, analyzes and makes awareness of his own knowledge, connected to the transformations that are occurring in the world. From this point of view, education promotes the basic conditions anchored in handling and the production of knowledge, by developing research attitude and competence to create its own competences. Constructivism has its origins in Piaget's proposals (2002) with his Genetic Epistemology, in which knowledge is generated (not inherited) and constructed by the individual in his gradual discovery of the world and his interaction with it. Regarding competence, "Constructivism" sees the final competent performance as a unique and original process of 'personal construction'. Such construction basically depends on the experience earned by the individual in the development process, from the knowledge that he acquired through

his discoveries in the course of his professional activity, from his accomplishments and personal creations and the recognition by society of the gains of his entire professional life.

The constructivist approach does not completely abandon the analysis of reality occupational. It only does not consider this analysis a finished product, but rather the result from diverse professional experiences that are constantly being modified by the action of technological changes, the discoveries that professionals perform in their daily experience and the constant negotiation waged in labor relations versus capital. For constructivists, norms are not seen as absolute targets, but as "constructs" that are subject to constant changes, revisions and negotiations. They cannot be seen as ultimate goals of a training process, but as important indications for guiding a spiral curriculum to reach it or surpass it. The training process can not be restricted to final elements of competence, even because the competence is individual and unprecedented. Competence, in the constructivist view, is understood as the ability to mobilize the knowledge, skills, attitudes and emotions to exercise one or more functions efficiently, effectively and creatively. The constructivist approach is not incompatible at all, with the functional analysis. It just does not take it as an absolute goal of the training process, because any goal setting is limiter of the educational building process.

In the analysis of skills, the collection of functions is not enough for the establishment of standards, as these will only be defined in the process of activities development in the workplace and as a result of negotiations. Once defined, the rules can always be reviewed by a new process. In the search for the foundational assumptions about the notion of competence, one must reflect on the movements of the working world in recent decades. This is what we will do next.

World of Work and Concept of Competence

The model of professional competence, under Deluiz (1995), has begun to be discussed in the business world since the 1980s, in the context of the structural crisis of capitalism, that is configured in the core countries in the early 1970s. This crisis is expressed by the depletion of the Taylorism and Fordism accumulation pattern, by hypertrophy of the financial sphere in the new phase of the internationalization of capital, by a fierce intercapitalist competition, with a growing trend towards

concentration of capital, due to mergers between monopolistic and oligopolistic firms, and deregulation of markets and workforce, resulting from the organization of wage labor and the social contract crisis. The structuring concepts of the model of competence in the world of work are flexibility, portability, versatility and employability. For capital, the management competence implies in affording flexible workers to deal with changes in the production process and to address unforeseen, requiring, for both, the versatility and the constant updating of their skills, giving them the correct measure of their employability.

Classical organization – Taylor classic model: expertise competence

This organization brings in its wake the capitalist tendencies of the work organization that may be summarized as follows: disqualification (by destroying the craftsmanship); the division of labor in simple and repetitive tasks; the reduction on labor cost (economic aspect); the hegemony of capitalism in the work place and in society as a whole (political aspect); separation from mental and manual work by machine; the subordination of the worker to the working conditions (pace and workday), necessary consequence of the technological use; the worker as an appendix to an existing material condition of production. Therefore, it is noticeable, striking features of the competencies that characterize behaviorism.

The period from 1945 to 1973, called the Fordist-Keynesian, was based on a set of work control practices, technologies and consumer habits configurations of political-economic power. From 1973 on, a period of rapid change of fluidity and of uncertainty began, making a meaningful passage from Fordism to a regime of "flexible accumulation".

Gramsci (2001) notes that Americanism and Fordism amounted to the largest collective effort to build up, with unprecedented speed, and with an awareness of unique purpose in the history, a new type of worker and a new type of man. New methods of work are inseparable from a specific way of living and thinking and feeling life. Questions about sexuality, family, forms of moral coercion, consumerism and State action were linked, in Gramsci's view (2001), to the effort to forge a particular type of worker suited to a new kind of work and productive process.

Fordism was faced with two factors that prevented it from expanding in the years between the wars: a) the state of class relations in the capitalist world, which was hardly conducive to the easy acceptance of a production system that relied heavily

on familiarization of workers with long hours of work purely routinized; b) mode and mechanisms of state intervention. The problem, as described by the economist Keynes9, was to arrive at a set of scientific management strategies and state powers that stabilized capitalism at the same time avoiding the clear obvious repression and irrationalities, as well as all belligerence and narrow nationalism, which arose from the National Socialists solutions. Gramsci (2001, vol. 4, notebook 22, p.266-267) thus expressed:

> [...] Taylor expressed with brutal cynicism the purpose of American society: develop to its fullest extent, in the worker, the machine-automated behaviors, break the old psychophysics connection of qualified professional work, which required a certain active participation of intelligence, fantasy, initiative of the worker, and reducing productive operations only to the machine physical aspect ... it is certain that American manufacturers do not care with "humanity", with the "spirituality" of Keynes (1882– 1946) who defended the thesis that the wage demands of employees contributed to the normalization of the economy through full employment. Workers who, in the immediate level, are crushed. This "Humanity and spirituality" can only be realized in the world of production and labor in productive "creation"; it was the precept in craftsman, the "demiurge", when the personality of the worker fully reflected in the created object, when there was still a very strong connection between art and labor.

The problem with configuration and use of own state powers was only solved after 1945. This led to maturity Fordism as a regime of accumulation fully completed and definitive. Fordism allied itself firmly to Keynesianism, and capitalism has had an outbreak of internationalists expansions worldwide that attracted to its network numerous decolonized nations. The state had to assume new (Keynesianism) roles and construct new institutional powers; the corporate capital had to be adjusted to obtain a safer profitability; organized labor had to assume new roles and functions related to performance in labor markets and production processes. With his main opponent under control (unions), the interests of the capitalist class decided what Gramsci (2001) had called before problem of "dominance", and thus, established a new base seemingly for class relations conducive to Fordism.

Remarkable is the way in which national governments ideological trends well distinct (Gaullist, Labour, Christian Democrats) created both stable economic

growth as an increase in the standard of living materials through a combination of state of social welfare, Keynesian social administration and the salary relationships control. Fordism depended upon the assumption by the nation-state, as Gramsci (2001) predicted, of a very special role in the overall system of social regulation. The legitimation of state power depended increasingly on the ability to bring the benefits of Fordism to all and find ways to provide health care, housing and suitable large-scale educational services, respecting human beings. The supply condition of collective goods depended on the continuous acceleration of labor productivity in the corporate sector. Only then, the Keynesian state social welfare could be fiscally feasible.

> The transition to the flexible accumulation brought new organizational and productive technologies forms. In this regard Harvey (2004, p 179-181) thus manifests: Devaluation of work force has always been the instinctive response of capitalists to falling profits. However, the generality of this statement hides some contradictory movements. New technologies have increased the power of certain privileged classes; while alternative production systems and control of the work, open the doors to the high remuneration of technical, managerial skills and entrepreneur character.

The application of new technologies contributed to overcoming the rigidity of Fordism and the acceleration of turnover time, since the open crisis in 1973. The acceleration production was achieved by changes in organizations, such as subcontracting, transfer office etc., which reversed the Fordist trend of vertical integration, producing an increasingly indirect route in the production, even with the increasing financial centralization. Other changes, such as just-in-time delivery system, 11 which reduces inventories, associated with small-batch production, decreased the turnover times in many production sectors (electronics, machine tools, automobiles, construction, clothing etc.). For workers, it all resulted in the intensification of the labor processes and accelerating disqualification and requalification required to meet new work requirements. The acceleration of turnover time in production involves parallel accelerations in exchange and consumption. Improved communication systems and information flow associated with the rationalization of distribution techniques, allowed the movement of goods in the market at a higher speed.

Gramsci (2001) asserts that from the "new form" of the work process it comes the "new form" of modern social organization. The new plant starts and synthesizes new social totality because it brings together the three key productions of its constitution

and reproduction. In fact, it is in the Americanism: 1) commodity production equipment; 2) production of the social nexus of wages and profit, that is, the ratio of middle-class contemporary society and, finally, it is 3) the production of an imaginary, a view of the world; that is, from its rhythms and its rational and mechanized organizational details, produces a lifestyle capable of a Puritan ethic as opposed to waster and unproductive behaviors.

Braverman (1987) recalls the principle of Adam Smith that the division of labor

is limited by the extension of the market. Therefore, Taylorism could not be disseminated in or applied to any industry, in particular situations, only when scale production was adequate to bear the costs and efforts involved in its "Rationalization". Braverman (1987) therefore observed that Taylorism coincides with increased production and its concentration in ever-larger industrial units in the last period of the nineteenth century and during the twentieth century. Consistently with his critique, he switches the attention off the problem of unequal distribution of wealth to the problem of inequitable distribution of power in the workplace.

In 1913, Henry Ford began to apply in practice the principles of Taylor in his

"Creative industry" of rationalized serial production. He adopted the observation, the time workers wasted in unnecessary movements, for example, in seeking screws in the tank. The problem was resolved with simple measures such as bringing screws next to the worker. To accelerate the process of assembly an automobile, the tasks became fragmented and a conveyor belt was introduced, in which parts of the car passed by while workers in fixed positions were assembling the pieces.

One can affirm that in the classic organization, the term competency is related to specialist, because of how the production is organized. The workers shall perform functions that require ever more operative actions, keeping up with the mechanization imposed by production. In this regard, Braverman (1987) argues that machinery, in addition to the technical function of increasing labor productivity, has also, the function to depose the control of workers over their own work. The role of specialist competence becomes a source not of freedom, but, of domain and confinement of the worker within a circle where the machine appears embodying the development and causes alienation of the worker in his specificity and due to their expertise.

Lean organization – Toyotist Japanese model: competence of flexibility

The changes in Nipponese industry, according to Deluiz (1995), and that caused the upheaval in the world's economy can be summarized as follows: the employees began to perform tasks previously assigned to supervisors, engineers and specialists, thereby acquiring new responsibilities in the processes of decision; quality control circles for autonomous and semi-autonomous teams were introduced, which assumed some functions of direct supervision and replaced the formal management structures; substitution was made from traditional assembly lines fragmented tasks for the production teams, exchanging tasks for turnover and cross-training employees, making it the most versatile production and requiring a more diverse training; productivity incentive policies were introduced, through profit sharing, safety programs at work, compensation according to the performance, and training of relationship skills and communication.

These features conote the syntagmatized competences in behaviorist and functionalist trends.

In this regard, it is important to relate the observations to Rifkin (2001, p. 202-203):

> A large amount of statistics collected over the past five years, seriously questions the merits of many of the "new" management techniques being introduced in factories and offices throughout the world. In Japanese factories, for example, where the annual work journey is from 200 to 500 hours longer than in the States, the pace on the assembly line is so fast hasted and stressful, that most workers feel a significant fatigue. According to a survey done in 1986 by the All Toyota Union, more of 124 000 200 000 workers of the company suffered from chronic fatigue. It should be noted that the principles of Scientific Management have long been known in Japan. Japanese automakers began using them extensively to the late 1940. In the mid-1950s, Japanese companies had created a hybrid form of Taylorism, exclusively set to their own circumstances and production goals. In the post-Fordism production, work teams composed of administrative and production positions employees participate in decisions planning to improve productivity. Once a consensus is reached, however, the plan of action is automated in the production process and systematically executed by all the assembly line. Workers are also encouraged to

stop the production line and make immediate decisions regarding quality control, again with the purpose of increasing the pace and predictability of operations.

The new labor laws, introduced in Japan by North American occupation, strengthened workers in negotiating the terms of employment with companies restricting thereby the right of companies to dismiss employees. If in America most of the workforce production consisted of temporary illegal migrants, in Japan there were guest workers. Moreover, the government had prohibited foreign direct investments in the automobile industry, thus ensuring space for the domestic industry.

In this favorable climate, Taiichi Ohno, Toyota's chief engineer, introduced a new technique for changing molds with strollers, using it for workers standing idle. In the late 1950s, he was able to reduce, from one day to three minutes, the time required for the exchange.

Additionally, he managed the cost per pressed piece to become smaller due to the replacing of the immense production of small batches process, since they produced only a few pieces before assembling them in the car caused almost instantly appearance of the pressing errors. This new system generated only two hours (or less) inventory and required a very qualified and highly motivated workforce.

When Japan went through a strong inflationary recession, Toyota had to resign a quarter of its workforce. This led to a prolonged workers strike and occupation of the factory. After many negotiations, employees and the company reached a compromise agreement that eliminated a quarter of the workforce, but remaining employees received double guarantee: lifetime employment and gradually increasing payments as time of service. Employees also agreed to be flexible in allocating tasks, and promote the interests of the company as being part of a community.

The secret of this production, called "lean", is coordinating this process so everything fits right on time, with high quality and low cost. Toyota began to organize suppliers into functional levels, giving each firm one level of responsibility. Vendors participated fully in the first level of new product development by the responsible team, decentralizing the engineering parts decisions.

Toyota then started to share their human resources with the other auto parts companies. Today, providers participate in the control of the company. In 1953, Toyota introduced a system called Kanban, consisting of a chip system of material control in order to eliminate excess inventory in each production unit. The stock should never exceed the specific needs of parts replacement. This process was called "method

of the supermarket" because it mimicked the practice of American supermarkets, where customers bought what they wanted and when they wanted. The management, instead of storing the parts, just replaced them after they are used. Just before 1950, Toyota had just created the system 'just in time'team for the assembly and delivery of components.

In 1963, workers began operating an average of five machines each. In 1965, the company extended the kanban system to all parts suppliers. In 1971, adopted the practice of moving workers to different positions, according to the needs of the assembly lines. Finally, in 1973, allowed the suppliers to deliver the parts directly to the assembly lines, linking them to the internal system placing parts. Suppliers closer to the factory, were already connected to online computer terminals. Chesnais (1996, p. 34-35), when speaking of technology and capital-labor relations, thus expresses himself:

> It is in this context that the implementation should be located, by the industry groups (both in the manufacturing sector as those of large service activities), the opportunities offered by new technologies, starting with informational technologies applied to industrial production and finance management activities. Benefiting simultaneously, from the new neoliberal framework and the computer programming, the groups were able to rearrange the terms of internationalization and profoundly modify their relations with the working class, particularly in the manufacturing sector ...
>
> Each step taken in the introduction of contemporary automation, based on microprocessors, was an opportunity to destroy the previous forms of contractual relations, and also means invented by the workers, based on the stabilized production techniques to resist operating in the workplace. In each factory and workshop, the principle of "Lean Production", that is, "No fattening of people" became the dominant interpretation of the "ohnist" model of outsourcing and the "just-in-time" were adopted even more quickly and easily.

One can say that in lean organization, the term competency is related to flexibility due to the accumulation regime. Harvey (2004) believes that the emergence of more flexible modes of capital accumulation shows up as a way the feasibility of achieving success in the capitalist economic system and necessary to control over the employment of the labor force. According to the glossary of mechatronics and

manufacturing processes (SENAI / SP, 1997), flexibility in mechanics, is understood as ownership of machines or robots to be adaptable or reprogrammable to be used for different tasks. Correlation of competence with flexibility is being understood as the ability to adapt to work with rapid changes of the environment and consensual and interactive processes.

Flexible Organization – American neo-Taylorist model: multiskilled competence

The main features of the flexible organization of this neo-taylorist model were influenced by the Japanese toyotist model. They are: assembly lines, adopting just-in-time; quality assured by the responsibility of each workstation; application of continuous improvement system (kaisen); inclusion of an active program suggestions, a refinement of procedures and the designation of special groups kaisen to study the personal suggestions or develop specific improvement projects; thorough analysis of each job by traditional methods to achieve maximum efficiency and quality; worker training in the functions of others and allowed the groups to move from one task to another. The denotation of this model is that competence lies in the functionalist trend. The notion of competence, in this case, has a restricted meaning to the practical intelligence. This restriction is quite favorable to the use of this notion, an instrumental or functionalist sense, since the suppression of formal intelligence of the dynamic structure of competence admits its direct identification to the behavior and performance, reverting, therefore to the fundamental principle of Skinner's behaviorism, which presupposes that behaviors are confounded with the own domain of knowledge.

In February 1983, General Motors – GM – decided to do a joint venture13 with the Japanese company Toyota, creating the New United Motor Manufacturing Inc. In September of that year, GM met with the Union of Automotive Workers and signed a letter of bipartisan intentions. By the company, it recognized the union as the sole bargaining agent for the workforce of the new company, specifically about wages and benefits, and stipulating that the majority of the workforce would be hired among workers from the GM-Fremont, securing employment. In exchange, the union agreed to support the implementation of the new system of production and trade a new contract.

This fact inaugurated a change both in politics and in labor relations. This represented a shift from the control and the conflict strategy to the compromise and negotiation. This measure showed a complete turnaround in paradigm of labor relations.

Since then, many American factories began to replace workers and simple function machinery, for multicomponent workers and machines Multifunction. In addition, new practices, such as just-in-time and customization, 14 were being rapidly adopted in all areas. This model began to be adopted in many US industries, earning the name "High Performance Work Practices", using the human capital.

In this direction, Wallerstein (. 2001, p 73) states that:

> The rationalization process, central to capitalism, demanded creating an intermediate stratum covering the experts of this rationalization, such as administrators, technicians, scientists and educators. The complexity of, not only the technology, but of the social system made it essential that this stratum was large, and with time, subject to extension. Resources used to support it were taken from the overall surplus extracted by entrepreneurs and States. In this sense – elementary, but fundamental – these managers are part of the bourgeoisie, and its claim to participate in the sharing of surplus gained precise ideological form in the concept – of the XX century – of human capital.

However, when it comes to changing production paradigm, the thing was not as simple as when they began to spread until it became current opinion. Adler (1993) who studied the changes occurring in the GM-Toyota plant, said what the company has adopted was an innovative form of Taylorist time and motion system. This opinion sounded like a big surprise because, for years, it had been held up the belief that when tasks are routine and repetitive, efficiency and quality required standardization of work procedures. However, high levels of standardization take from workers their intrinsic interest, reducing the motivation and creativity.

For Adler (1993), the demotivation of the work led to a number of behaviors dysfunctional employee, including, absenteeism, alcoholism, high turnover, poor attention, strikes and even sabotage. Such behavior would be responsible for an authoritarian management reaction, with increasing hierarchical levels and even higher levels of standardization. It was thought that Taylorism led to workers

dissatisfaction and unions belligerence and, consequently, to elevated levels of bureaucratic excess.

Adler (1993) argued that the second part of this reasoning was false. In fact, standardization of formal work, developed by industrial engineers and imposed to workers, it is alienated. However, procedures, when designated by the workers themselves in a continuous and successful effort to increase productivity, quality, skills and understanding, can humanize even the most disciplined forms of bureaucracy. The New United Motor experience, according to him, shows that hierarchy can provide support and expertise, rather than a mere command structure.

The difference between traditional Taylorism and version-oriented learning applied to the GM-Fremont, compares Adler (1993), is the same which are among the computer programs considered "fool-proof" and those that take into account the capacity of users. The first disqualifies the operator's tasks to virtually eliminate the possibility of error. So, however, it ends up eliminating the ability of operator to respond to unforeseen situations and new ways to use the system or adapt to new applications. The "fool-proof" system may be easy to use, but is too static and boring. Systems in the New United Motor Manufacturing Inc – NUMMI – took up time to learn. Required more reflection and qualification for work, but it was immensely flexible and, consequently, satisfying the worker once it reached its commands. Furthermore, in the previous system, the relationship between the production system and the worker was adverse. The patterns and the hierarchy served for the coercion of reluctant workers. There was not much that could improve the operator, and the system was entirely rigid, when it failed, everything stopped until an expert arrived to make the repairs. Adler (1993) argues that two aspects of the Taylorist model also persist and are essential so that there is efficiency and quality: the discipline of the times system, the movements and the formal bureaucratic structures.

One can say that in flexible organization, the term competency is related to multi-competence, due to the deployment of multiple machines functions and practices of high-performance work. The multi-competence relates to the need to respond quickly to the situation of efficiency and quality. The most responsible and precarious required multi-qualification and adaptation to diverse situations.

Autonomous Organization – Swedish holistic model of competence versatility

The main features, according to Deluiz (1995), the Swedish holistic model, can be translated in the following aspects: 1) Environmental Architecture – A management of Volvo summoned architects who brought new ideas from a building facilitate teamwork. The rooms were clear and well-ventilated and the noise level was reduced. It aws a major innovation compared to traditional factories that were mounted in a large shed; 2) Elimination of the assembly line – the biggest breakthrough was in the more flexible transport than a mechanical conveyor system. Vehicle was made by Electric Automatic Guided (Automatic Guided Vehicles – AGV), which was the largest invention of Kalmar. The vehicles were not controlled by the teams, but by a central computing; 3) Ergonomic Planning – A new plant took into account ergonomic aspects, where a harmonious environment would lead to the team's motivation, enabling them to cooperate to increase efficiency. The plant in Kalmar separated each team in their own environment and met the requirements of modern ergonomics. That meant a breakthrough over traditional factories; 4) New interpersonal relationships – The goal was to create a factory, without any sacrifice of efficiency or cost to the company, would give opportunity for employees to communicate freely, work in groups, move from one station to another (in order to identify with the product and vary the pace of work). Therefore, self-awareness would trigger responsibility for the product quality and influence their own work environment; 5) Salary based on results – the company introduced in 1980, a salary based on results for all employees.

Ten years later, the assembly time by car was 25% lower than the Toshiba factory, reduced to an hour and a half. The quality was higher and the costs were more competitive. The flexibility of the new system increased the intensity of labor, reduced consequences of errors and managed to achieve a high level of efficiency. In 1985, the Kalmar workers were busy, productive, 95% of the time. In the same year, full time mechanical adjustment was 2.5 hours versus 4 hours in Kalmar in Gothenburg. It should be noted that the system of Kalmar also included flexibility in product changes. The teams organized by functions were similar to a small factory inside the factory. The original idea was that each group would mount a full-function, for example, an electrical system. The wage system was not related to the system jobs,

but according to the position (skill rate). Frequency, service time permissions and productivity bonuses were also considered. The individual competence within the stations, or the group bonuses to increase of responsibility were not considered. This model, which connotes the functionalist and constructivist trend is mirrored in the experience developed in Sweden by Volvo Trucks factory, between 1974 and 1985. It is a classic case, for it brought so many clarifications on the tensions of organizational transformation of assembly work, as on the counteracting effects of the so-called "flexible specialization" (BERGGREN, 1992).

The Swedish experience came from entirely new concepts: group organization and high degree of task delegation and collective responsibility. The Volvo plant in Kalmar, was small for 1974 international standards, but it meant a lot to its creators, it was the first car factory in the world built without assembly lines. Engineers began designing a traditional factory. The creative management, however, took the initiative to organize the production of automobiles, making each employee find meaning and satisfaction in their work. However, it did not find on that occasion, union support.

It can be said that, in the autonomous organization, the term competency is related to versatility due to the high degree of autonomy and creativity, as well as requiring the employee to be able to articulate specific knowledge, applying them in various situations. According to the glossary of methodologies (SENAI / DN-p.28), versatility designates the attribute of a person with different professional skills and repertoires for achievement of various levels of complexity in activities in related areas. It implies a high degree of creativity and autonomy and the ability to articulate specific knowledge with its more general grounds, applying them to other situations.

After analysis on the world of work organizations, where expertise in its fluidity and polysemy, took several connotations, including, most significantly, of the flexibility, expert multi-competence and versatility, in this semantic construction we must make a reflection between competence and qualification.

Competence and Qualification

When talking about professional competence, it is necessary to address the relationship between qualification and competence. According to Zarifian (2001), the notion of qualification, key notion of sphere of work, appeared since the beginning of economic thought with Smith (1723-1790), who promoted an industrial activity

approach, resumed later by Taylorism, which sought the effectiveness of operations in the production line. It is noticed that both qualify as competence are polysemous terms. It is also necessary to record each one's coverage and how competence was held in qualifying.

Deplorando a depreciação da mão-de-obra, Dadoy (apud Roche, 2004, p.35) retoma essa constatação nos seguintes termos:

In order to relate qualification to Taylorism, we must talk about intrinsic qualification to the individual, that it becomes extrinsic and appears related to the theoretical work, not only to an effective work. Because it is not only the qualities of the individual, but the activity characteristics, Forté (1992) connects qualification to the technological, societal determinism, and principle of productive efficiency.

When speaking of technical progress that allows for modernization of unit production and an intensification of Taylorization in series industry, it is speaking of "technological determinism" that brings the concern regarding the activity depletion and reducing the necessary training to accomplish the task.

Deploring the depreciation of manpower, Dadoy (apud Roche, 2004, p.35) retakes this finding as follows:

> Since then, the ability of a successful new contract replacement, in a few weeks, a worker whose long experience at work was, at the same time, money and pride, could only seem, to the victim, the evidence of his disqualification, in fact, generally sanctioned by disqualification in hierarchical grids, and the index of a systematic depreciation policy of working manpower.

Concomitantly to studies about the depletion or enrichment of the tasks, consecutive to the technical progress, the discussions about qualification are organized around the social relations and the struggle for working conditions and the determination; it is the so-called "societal determinism".

Then we speak of evaluating the qualifications in a macroeconomic logic, in detriment of its own intrinsic content. In this case, it is stated that the deficit of the content analysis of the qualification is even more sensitive to change, currently, when the concept of competence tends to supplant the qualification. Both technological determinism and the societal determinism presents unavailing since the 1980s, when major changes are involved in the organization of work: abandonment of the principles of division of labor, the introduction of computers and new technologies in

complex organizations. Thereafter, the qualification enters a stage at which it acquires a strategic function condition of "productive efficiency" and rejoins the individual dimension, breaking with the idea of productivity gained by labor intensity. To Dadoy (1990), the classification refers to the person, first of all, and goes beyond the social relationship between the professional capacities of the worker and their salary range. According to this author, the qualification is also the set of knowledge and knowhow actually employed by the workers. She refers to the individual, their specificity, the originality of his personal history, their experience, their abilities, and even their potential.

The displacement from qualification to competence is explained not only by the changes of the activity contents, but also a loss of reference in the definition of jobs in their classification and their corresponding remuneration. Then, it has confirmed a crisis in the essence of qualification: the valuation of individuals and of industrial activity content. It means that jobs progressively redesigned, are no longer characterized by the traditional criteria nor identify themselves, regarding the capability extension, or the relationship of training or experience content. It is noticed that, in these conditions, there is a semantic competition with regard to the competence and qualification. The experimental dimension of qualification, then, gives away to numerous researches since the 1980s, from the moment it is perceived as a condition of productive efficiency in industries.

The discussions held, therefore, about the notion of qualification are reactive because foundational category of qualification, belongs to the societal or technological determinism or to the production efficiency, maintaining a reactive status as an attribute of the concept of work that floats in the same rhythm as the latter. In this case, one can no longer think qualification based on the task and should be thought of as grounded in the individual.

This shift in logic has important consequences for human management resource. Actually, when you know something is for life; when something is momentarily transient and contingent. Moving from the logic of "having" to the logic of "being", the individual develops a logic of certainty and a logic of uncertainty, a logic of stability to a logic of instability, a logic of permanence to the logic of transformation. The competent person in a given situation at a given time, may not be in another situation. Competent at age 30, he can no longer be the 40, if not evolved. This logic of being imposes a dynamic, an ongoing adapter attitude, a vision of transformation, absent in the design of the qualification.

The connection between the acquired diploma qualification and the skills required to carry out a professional activity did not come into question by any partners, even in the sphere of labor, nor in education, neither by the young parties, who are interested. The theoretical training, validated by statute, brings the concepts, the ideas, the general principles that describe the real, which Malglaive (1995) calls "theoretical knowledge that proves adequate for the job."

The idea qualification is built on sociology, and after a great effort to conceptualize it, there seemed to be, some time ago, a consensus among sociologists that it is an open concept, evolving, because it has in the notion of work, also open, a key reference. Thus, if prior it was limited to the knowledge and expertise, it was also historically related to workers classification operations, and determining their salaries, now it deals with the specificity of the individual, one's originality, career, experience, capabilities and potentials. Its open character concept shows up, therefore, important for survival and for the establishment of a differentiation in relation to competence.

Competence, on the other hand, as stated Tomasi (2004, p 157-158) is:

> a demand of patronage, and the term is employed by him and not by sociologists. Competence deals with the requirements of each position, that Companies no longer know how to define and whose absence is manifested in a failure or continuous breakdown. It is independent of the individual specificity and it relates to professional skills, systematic training socially controlled. Competence is defined, therefore by the job. It prioritizes the work and constitutes the measure of the worker performance. This is a field knowledge shared with other disciplines and professions: psychologists, anthropologists, ergonomists, linguists, educators etc. The competence is also, and above all, in behaviors, attitudes whose key feature is to anticipate problems, not just solving them.

To the new mode of production and flexible accumulation, with the organization and management firms in networks, new employees are imperative. A worker who performs repetitive, mechanical tasks and without initiative, is not sufficient anymore. Even the worker who performs the simplest activities, nowadays, in addition to that, should be able to think, dominate general knowledge related to their work or, interpret text, graphics and tables, having knowledge in computers, ability to interpret data initiative and criticism, and still be able to work in teams. Thus, the formal education, that is, professional qualification, a range of skills is required

related to new technologies, as well as attitudes and behaviors. This is the new logic which arises the notion of competence.

ligadas não mais ao modo taylorista de produção, mas ao modelo baseado na organização japonesa do trabalho, batizada de toyotista. Para ganhar competitividade num mercado em crise, as empresas teriam de aumentar a qualidade e a diversidade de seus produtos e aumentar o número de lançamentos e variedades de um mesmo produto, visando nichos cada vez mais particulares do mercado.

The notion of competence has been placed as a more suitable alternative than the qualification, as it is more in tune with the "new needs" of the work market, introduced by technical progress and new forms of management, no longer connected to Taylor's mode of production, but to the model based on the Japanese organization work, named toyotist. To gain competitiveness in a market downturn, companies would have to increase the quality and diversity of their products and increase number of entries and varieties of the same product, targeting increasingly peculiar market niches.

The new competency model, from the point of view of the companies, regarding workers, combine a mix of the following elements: recruitment standards that favor the diploma level; enhancement of mobility and monitoring of individualized career; introduction of a continuous evaluation processes for employee's development in the company; new evaluation criteria which emphasize the personal and relational qualities such as responsibility, autonomy, ability to work in teams, etc .; instigation to further training, which means learning always; devaluation of the older systems of classification based on levels of qualification and originated in collective bargaining; privilege of individual negotiations.

Ramos (2002, p. 193-194) discusses the qualification as a social relationship, putting skills at the level of individual responsibility. She says:

> Theoretically, with the qualification, competence tensioned as a set of unstable properties subjected to proof, opposing to qualification assessed by socially diploma, acquired title forever, and to the antiquity and to the very idea of profession. Therefore, opposes to the conceptual dimension of qualification. These skills may have been acquired in different experiments from formal education and are treated as individual features. Not referring to a formalized category, the notion of competence does not justify the claim of collective rights. The competence shall be in the beginning of the organization of work, place of qualification / occupation.

> While mastery of a profession, once conquered, cannot be questioned, skills are presented as unstable properties in and out of the work field. It means that, management based on competency covers the idea that an employee must undergo a permanent validation, constantly giving evidence of their suitability for the job, of their right to a promotion or promotional mobility.

In this line of thought, individual performance becomes a criterion of success. According to Dupas (2003), individual performance becomes the ultimate criterion of success in a context in which society provides citizens increasingly fewer opportunities.

Carnoy (2002) argues that globalization has had a considerable impact on education, especially through the financial reforms advocated by monetary and international institutions. Such reforms proposed, first, reduce spending on public education. In this version of structural adjustment, education expansion and a better quality of teaching, are part of the public financing, restricted in this area. In the new global environment, it is essential that the educational policy makers are fully aware that the State is actually unable to increase the education budget and that "shortage" is an ideological preference in favor of private investment in the education sector. According to the author, the consequences of this new organization of work are important for education. If a person changes jobs frequently, the best general knowledge you have acquired, the more easily able to acquire the skills required for different jobs.

On the other hand, employers always prefer to employ, individuals who, in addition to possessing particular skills, learn quickly. The vocational education never created jobs, because when there are vacant positions, preference is given to the general youth with vocational training that ends up getting a higher pay. Flexibility in work organization means that a good quality general education that helps an individual to collect and interpret information, and to provide conditions for solving the problems, is more valuable However, this also means that vocational training must be grounded in a general and multipurpose education. It is also necessary to note, that, the more flexible the work frame, the more talents of communication and cooperation will be rewarded.

The notion of competence is not settled, however, only in the business logic. This model also reached all segments of culture and education models of different national states. The topic which will address skills in an international context will

attempt to show that . In Brazil, skills are defined in MEC documents in the Federal Law No. 9394/96 – LDB, as well as in the National Curriculum Guidelines DCNs15 – the Elementary and Secondary Education, published as guides and sent to all teachers in the country. In the sphere of education, notion of competence connects to "the defense of democracy, citizenship, social justice, against inequalities and respect for the differences."For MEC – Ministry of Educação16, the problem of quality reduction links closely to the lack of resources. Ministry notes that the private management system emphasized an economic view, with "blend of resources from time/cost relationship, replacing the time of learning, generating a process of commodification of education ". The way the public sector plays its role in expansion and improvement of education resonates in a very different way, in maintenance of educational tasks.

It appeared that, in the current context, qualifications, according to Ramos (2002), are modalities of professional training, and competence is broader because articulates knowledge, skills and values. In the search for foundational principles on the notion of competence, in the next chapter we will verify how it is defined or constructed in some countries.

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The quadripolar model applied to technology-mediated education information and communication: an empirical study

Francisco Alberto Severo de Almeida
Armando Malheiro da Silva
Antonio Teodoro Ribeiro Guimarães

The understanding of the education phenomenon, mediated by information and communication technology, goes beyond the cultural, political and economic precepts which guide the principles and fundamentals related to traditional education. The Traditional education, with its rigid didactic-pedagogic organization and with spatial and temporal structure limited to the use of available physical infrastructure, has difficult in making it flexible and extending the actions of education. However, since the phenomenon of distance education, mediated by information and communication technology, is founded in paradigms that measure the learning process under the perspective of distance education. Therefore, the Distance Education stands as a viable alternative to face this contemporary education challenge of breaking the barriers of space and time.

It is the conception adoption of education in centered school function – the school goes to the student wherever he is, with the flexibility of learning conditions and the fundamentals and self-study, in the independent and supervised study respecting everyone's pace (MAFRA, 1998). Moreover, it democratizes the access to education to a significant number of people who are not assisted by education in classroom mode. For Lobo (1991), distance education is a strategic to expand access

to education, once it should settle and deepen the pedagogical project commitment with the historical, social and political project of a nation.

This way, it will be thought that the contributions which an institutional model of distance education, via web, implemented in a Public Institution of Higher Education bring to settle and strengthen its educational policies. Contributions to Distance Education – EAD are important to overcome social obscurantism forged in the absence of access opportunity to education of a meaningful portion of society by offering graduation courses, post-graduate courses and continuing education. One also has to think of the expansion of new frontiers of knowledge on the issues related to the models application of education mediated by information and communication technology, especially regarding its structure and operation, from the definition of methodological guidelines and interdisciplinary content of the curricular subjects to the application of multimedia resources, consistency analysis of the teaching material and even the insertion and application, via a virtual learning environment.

In this context, the contributions of this study are relevant in two respects: in the point of view of evaluating the performance of system management for web-based Education and also, as regarding the scientific knowledge application based on systems theory and quadripolar method approaches to research and explain the education construct mediated by information and communication technology.

Based on this scenario, it is where it renders the research on the distance education model mediated by information and communication technology in the State University of Goiás (UEG), Brazil, centered on the construct of quadripolar method approach to and the standpoint of systems theory. In this context, the objective of this research is to deepen the understanding of the relationship between education technologically mediated and the *performance* of distance education system via the UEG website, looking forward to contributing to the advance the knowledge of Information and Communication Sciences and verify how the elements that make the paradigms of education, mediated by technology, relate to the performance of the distance education system via web in the quoted university.

Research problem and objectives

The paradigms of education, mediated by information and communication technology, related to distance education issues, show some association with the performance of the distance education system via web?

This being the basic problem or question of our research, we set as general goal, already expressed above, and specific objectives that should be specified:

- Analyze how the paradigms of education, mediated by information and communication technology, are perceived by students of education distance via web;
- Analyze the application effects of the paradigms of education, mediated by information and communication technology in distance education system in UEG;
- Check how the elements that make the paradigms of education, mediated by information and communication technology, relate to the performance of the distance education system via the UEG website;
- Identify aspects of the paradigms of education mediated by information technology, which may be the object of improving the management practices of the Distance Education system, object of this study.

The quadripolar dynamics: from the method to model

Based on the scenario above, it's tested something waiting to be done after three Canadian authors linked to the Education Sciences adapted to this scientific field little known proposal, though not completely ignored, of three Belgian authors and published by accredited Presses Universitaire de France (PUF) in 1974 – the proposal of a post-positivist and holistic method thought to qualitative research in Social and Humans Science[1]. And what was just waiting to be done was converting the model

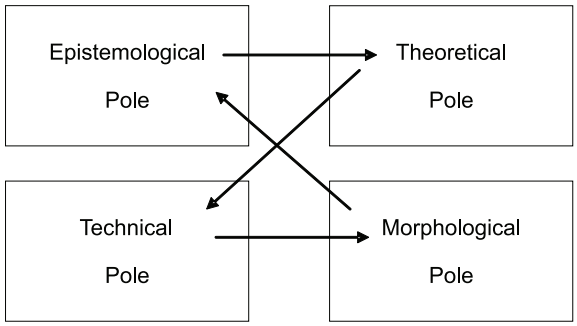
1 With four poles: the epistemological; the theoretical; the technical; and morphological. The investigation process develops because, from a structured field these four poles or different methodological instances , which undergo to their own requirements, without constituting at separate times, before articulating each other at every stage of the achieved research (extracted view

application to a strategic construct – the Distance Education System – the building blocks of the quadripolar methodology.

Indeed, in 1990, these Canadian authors published *Recherche qualitative: fondements et pratiques*, translated into Portuguese and published in 1994 by the Instituto Piaget (LESSARD-Hébert, Goyette & BOUTIN, 1994). The preface which presents the work emphasizes that the authors have endeavored to bring a deep and serious discussion to the problematic qualitative methodology, contradicting the common notion that scientific activity which explores social and human problems is a "journalistic" activity, "second hand" or even set aside under the pretext of having not yet demonstrated its "scientific credibility". In the introduction the authors begin by just saying that they cared about the methodological issues aroused by qualitative research in education. And in the search of more effective and efficient responses they braved the epistemological debate, urgent in this field, fetching the three Belgian authors an analysis grid that allowed them to organize, regulate and improve the data on the qualitative approaches gathered during the literature review: this grid is therefore based on a general model of understanding the methodological investigation. This is the quadripolar model, in other words Paul De Bruyne, Jacques Marc De Schoutheete and Herman (1974) conceived the methodological practice as a designed quadripolar space in a particular field of knowledge. They stood at the level of a general methodology, getting themselves more by the guidelines rather than inscription for the instrumental and technology or logic perspective, and that reduce a number of research procedures or linear steps (like the seven stages of QUIVY; Campenhoudt 1998: 30).

of the back cover – DE BRUYNE; HERMAN, Jacques; DE SCHOUTHEETE, Marc, 1974).

Figure 1 – The Quadripolaridade of a method designed for essential qualitative research in the Social Sciences, in whose broad field of Information Science is inserted



Source: SILVA 2002; 29

Before the Canadians, the book of De Bruyne and colleagues had already attracted the curiosity of researchers and editors who translated and published in Brazil (DE BRUYNE, HERMAN, DE SCHOUTHEETE, 1977), reaching the fifth edition in 1991 with the translated title literally from the French edition: Dynamics of social science research: the poles of methodological practice (Rio de Janeiro: Francisco Alves). This sign of interest in the quadripolar proposal culminated in the recent publication of an investigation manual of two Brazilians college students, Gilberto Andrade and Carlos Renato Martins Theophilus designed for the Social Sciences (Martins Theophilus, 2007). In the introduction of the manual the authors speak of a "paradigmatic model" and underline something that is fundamental to realize the importance and originality of the quadripolar proposal by De Bruyne and colleagues: the complexities involved in Applied Social Sciences prevents that the investigation is not reduced to a sequence of operations based on procedures or immutable steps. On the contrary, the construction of scientific work requires interpretations and constant twists among different instances of the various poles. Gilberto and Carlos Martins Theophilus (2007) to the four known poles decided to add two more – methodological pole and assessment pole – in a didactic excess that is not justified, but that will be discussed here (Martins; Theophilus, 2007: 4 ff.).

The advantages of a quadripolar methodology stem from the post-positivist thought, systemic and constructivist that underlies it and ought, therefore, to dwell in a little about the philosophical basis of this relation with the need to build a flexible and holistic model that can be applied to EAD.

The General Systems Theory revolutionized the way of knowing and understanding the social phenomena. Firstly it is seen as the counterpart of logical thinking, which its foundations are in Cartesian principles of evidence, analysis, synthesis and enumeration in representation as the sum of its parts that form the whole. However, the systems theory with its principles based on concepts that are the whole is not the simple sum of the parts, revolutionizes the way of thinking about the social phenomena. The chain of systems theory holds ideas contrary to Cartesian dialectic, where the whole is represented by the set of parts and their relationships and interactions between each other and the environment (BERTALANFFY, 1975; CHURCHMAN, 1971; CAPRA, 1999, VASCONCELLOS, 2007).

Thus, the systems thinking is formed by the analytic understanding of the set of interrelated parts that constitute a dynamic process of interaction between several divisions that have a certain phenomenon. In systems thinking we seek to understand a phenomenon from the whole it represents and not by the behavior of its parts, therefore being an antithesis to Cartesian thought where the laws that govern the behavior of the whole are considered fundamental (RAPOPORT, 1976, p. 27). LE MOIGNE quoted by Viegas, 1977, p.8-23,) shows a parallelism between the Cartesian and systemic vision that depicts this dichotomy.

However, the duality between the Cartesian thinking and systems thinking as a way thinking educators, presents itself as a barrier to understanding the educational phenomena in modern organizations, especially when it comes to Distance Education.

The universe of modern organizations has its genesis in the model of Cartesian thought. Hence, to materialize the educational processes in prescriptive logic models, founded on the precepts of traditional education blocks the capacity of professionals in education understand the world of distance education through the prism of abstraction.

Thinking distance education through the prism of a dichotomy – the systemic or Cartesian dialectic – transcends the perspectives of understanding the educational phenomena, therefore, proceeding this way directs the mind to the understanding of different realities in specific points of views. The logical model (Cartesian) describes the reality of the parties without encompassing the whole, therefore, is reductionist; the systemic model, however, extends this coverage to the vision of the whole. But the two approaches often do not make it possible to designed operational models due to the inability of educators to understand and build the relationships and interactions of the referenced phenomena, either by logical description or cognitive abstraction

of an observed reality. Constructs are riddled as centered bias in logic thinking with the noun (the reason) or form abstract thinking as the verb (action) to design their models of education management. Approaches to education and its main currents trend of thoughts give rise to this duality: positivism versus constructivism. However, it is mister understand these methodological differences of this duality between the Cartesian dialectic and systemic for proper understanding the phenomena related to traditional and distance education.

Table 1 – Cartesian Vision and systemic vision: a parallel

CARTESIAN PARADIGM	SYSTEMIC PARADIGM
EVIDENCE: a clear and distinct idea makes it possible to eliminate doubt. ANALYSIS: reductionism: it all comes down the sum of its parts. SUMMARY: causality: conduct in order the thoughts, even supposing order among those that are not naturally followed. LISTING: completeness: do so complete reviews that are safe of nothing have been omitted.	RELEVANCE: any object only defined in terms of intentions implicit or explicit on the subject about it. GLOBALISM: any object to be known should be seen as part of a larger whole (the environment). Prior to seeing its internal structure, which verify the functional relations with the environment. TELEOLOGY: purpose/goal: interpret the object not by itself, but by their behavior and by projects the subject in relation to it. AGGREGATIVITY: get variables that interest to the subject, as it impossible to exhaust the knowledge about the object, knowing beforehand that every representation (model) is simplifying.

Source: VIEGAS (1977, p.8-23)

They are, however, complementary scientific methods in the construction of educational models. While systemic social approach, by its interpretation of interactions and organic certain phenomena, seeks to understand the whole and allows the construction of abstract models that demonstrate all the interactions between a set of hierarchical systems, the Cartesian approach, the substantive perspective of reason, allows operability and the description of these abstract models into logical representations of an observed reality.

The need to build a model that satisfies these essential philosophical requirements leads us to finally enter the text of the original quadripolar proposal with a very brief reminder of the professor's Preface at the University of Louvain, Jean Ladrière, who considered the book "work of reflection, clarification of a path, prospective effort, contribution to the self-constitution of reasoning science, but, truly, thought. Behind the discourse on method is announced, the word of the foundation" (DE BRUYNE; HERMAN & SCHOUTEETE 1974:19). And highlights a material aspect that cannot be overlooked: the epistemological conception underlying methodological approach of the three authors is not an analytical-normative doctrine that could be presented as a kind of canon of scientific reason. Rather, it is an outlet for methodological awareness that, being animated by an effective care of radicalism, tends to always be unfinished, to be suspended for an indefinite requirement of self-awareness or always remain unsatisfied.

De Bruyne and colleagues attacked the delicate and central issue of discussing of scientificity of Social and Humanities Sciences, disrupting the complex that practitioners of these disciplines have come to suffer in the face of "objective and overwhelming" power of natural sciences, capable of imposing criteria and methodological formalism. The alternative does not lie, according to them, in print, but in searching of autonomy of scientific research, effective and proper, together with the constructive principle of interdisciplinarity. Following this path they came to the idea that "a autonomia da prática científica, autonomia cuja precaridade é aparente, pode ser concebida do ponto de vista metodológico como a articulação de diferentes instâncias, de diferentes pólos determinando um espaço em que a pesquisa se apresente como implicada num campo de forças, submetida a certos fluxos, a certas exigências internas" (DE BRUYNE; HERMAN & SCHOUTHEETE 1974: 34).

So, they distinguished four methodological poles in scientific practice: epistemological, theoretical, morphological and technical.

According to the authors, the first and decisive pole across dynamic research is epistemological that "plays a critical role in surveillance" (DE BRUYNE; Herman & SCHOUTHEETE 1974: 34). Throughout the research, it ensures the objectivity – in other words, the production – the scientific object, the explanation of the research problem. It takes charge continually renewing the rupture of scientific objects with common sense. In a final instance, it decides the rules of production and explanation of the facts, of the understanding and of the validity of the theories (DE BRUYNE; HERMAN & SCHOUTHEETE 1974: 34). It has in its orbit "a range of discursive

processes" too general "methods" that impregnate with its logic the investigator's initiatives. They are, namely, the dialectic, the phenomenology, the hypothetical-deductive logic, quantification – processes that do not mutually exclude themselves, some may even be ubiquitous, and others may not appear in specific searches.

The theoretical pole guides the development of hypotheses and the construction of concepts. It is the place of systematic formulation of scientific objects. Proposes rules to interpret the facts of specification and definition of the solutions to the provisionally given to the problems. Finally the place of the development of scientific languages and determining the conceptualization movement (DE BRUYNE; HERMAN & SCHOUTHEETE 1974: 35) and that is a neighbor of "frames of reference" that provide inspirations and issues arising from theoretical and practical contributions of disciplines and "habits" acquired. These "frames of reference" play an implicit paradigmatic role. Here are a few: the "positivist", the "understanding", the "functionalist" and the "structuralist".

The morphological pole is the instance of the statement of the rules for structuring, formation of scientific object by imposing some shape or form, a certain order among its elements. It allows to put a space of causal network to be built in the scientific objects, either as models/copies, or as simulations of real problems (DE BRUYNE; HERMAN & SCHOUTHEETE 1974: 35). It also raises several modalities of frame of analysis, various methods of activation of the constitutive elements of scientific objects: the typology, the ideal type, the system, the structural models. These various configuration forms compromise, in most cases, research on the choices mutually exclusive. The causality is designed in a particular way in each of these frames of analysis.

The technical center controls the collection of data, it strives to finds them to put them in confrontation with the theory that was raised. It requires precision in observation, but does not guarantee, by itself, accuracy (De Bruyne; Herman & SCHOUTHEETE 1974: 35-36). These modes of investigation indicate practical choices by which researchers choose a particular type against the empirical facts.

The dialectical interaction of different poles constitutes the essence of the method proposed that concretely inspire the modeling that we operate here, taking in account an open and systemic implementation of Distance Education. Method/theory and model are distinct concepts and they are here to remind you briefly (SILVA, 2010).

Under the entry model DeltCI – Electronic Dictionary of Terminology in Science Information, the strategy was limited to match the target that it was intended to achieve immediately: putting the operative concept model in the theoretical-methodological arsenal of Information Science, and lacking emerging field of theoretical and conceptual appropriations, properly adjusted to your specific issues and problems, and even theoretical and conceptual formulations themselves. For this, it should be from the surrounding environment of Social Sciences and establish links and the most appropriate specification. However, the approach is too short and narrow, even though that model and modeling constitute a strike rich length accompanying scientific development since the mid-century XIX, deserving discussions and in-depth epistemological reflections.

And what about this scenario? The scarcity dominates, albeit a small book by the French philosopher Alain Badiou titled Le concept de modèle introduction à une épistémologie matérialiste des mathématiques (Badiou, 1969), which placed the subject in field discussions of the structuralist project in the Social Sciences and Humanities and had the concept model called attention to a crucial philosophical issue: relationship established by modern science between epistemology and ontology and multiplies itself in various questions such as "what is a model?" , "what does it mean to model one problem?" , "these expressions have the same sense in logic and in physics?" , "the same sense in biology and in engineering?" , "the same sense in climatology and in economy?" , "the same sense the environment science and in political science?" . In the answer to these and other questions it is untied and explained the intricacies of the essential question set out above.

Here, it is important to emphasize the distinction between theory, model and method, since in Social Sciences conceiving and operationalizing a model does not dispense a clear theoretical basis and does not end in practicality merely instrumental.

The theory emerges as an instrument of general explanation of the phenomena which aims to answer, once properly formulated, the multiple issues concerning "several concrete systems", while model is often confined to the precise and well delimited objectives. But, as the author emphasizes, in a large part of the modern literature, the semantic difference is up-blurred and even tends to disappear, there is rather a confusion which contributed greatly to empiricism, after the Renaissance, and skepticism "which should inevitably result from the findings of a large part of the philosophy of science and epistemology as the difficulty of achieving indisputable certainties when it comes to scientific knowledge and its conformity to a final

and unequivocal reality" (DELATTRE, 1992: 270). Relativism eventually provids extensive use of the term "model" understood, then, as "a kind of understatement of the concept of theory" (DELATTRE, 1992: 270).

That said, in general terms, it should be noted that the quadripolar methodology served not only of inspiration but as a reference to the legitimate and necessary initiative to find a theoretical and practical tool – a model – to help implement and continuously review the Distance Education training system.

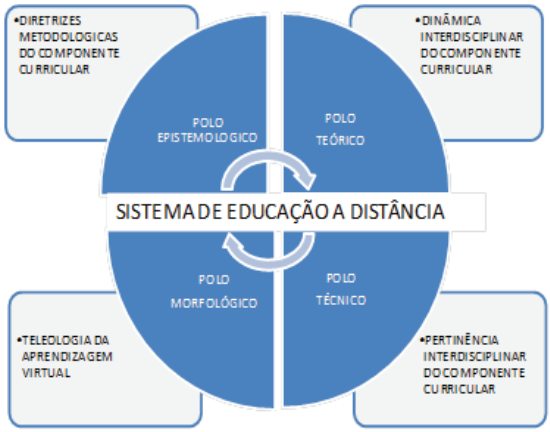
A quadripolar model to distance education

It is undoubtedly important to highlight the role of new technologies for democratizing Distance Education, it expands the universe of knowledge and inserts the student as subject of their learning process, with the advantage that he can also discover how to become an active subject of researching and sharing the content.

However, it is worth noting that the e-learning systems are the technological important tools for the development of the teaching-learning process in the distance education system – they are means, not ends, per se; since the distance education is in a process that transcends beyond the distance learning. While distance learning focuses on the process of learning, socialization of information and instruction, education is based on the process of human development, the knowledge of thinking, creating, innovating and the knowledge of construction (MAFRA, 1998). In this sense, e-learning system consists in one part of the whole we call education mediated by information and communication technology, hence the need to see Distance Education from the perspective of systems theory.

Thus, when dealing with the distance education mediated by information and communication technology, may be taken as a reference, to a particular educational reality observed, the construct of the Distance Education System under the focus of the quadripolar model.

Figure 2 – System of Distance Education under the Focus Quadripolar Method



Source: Authors

The Epistemological Pole presupposes the development of a diagnostic action based on questionnaires and questioning attitude toward the thematic issues to be addressed and the educational prerequisites necessary for the definition of the knowledge object to be exploited in the organization and construction of a unit of curricular knowledge. On the other hand, it focuses on elements that lead to the identification of methods and practices related to the teaching-learning process to meet precepts of the education program, in reference to the set of skills and competencies to be transmitted to the student.

The Theoretical Pole, in reference to methodological guidelines of the curricular component establishes a set of theoretical and practical approaches to the reasoning of unit of the curricular knowledge, establishing a trans and interdisciplinary systematic to thematic content of the curriculum components.

The Technical pole is the benchmark analysis of the relevance and consistency of the unit curricular knowledge, regarding the application of trans and interdisciplinary to thematic content of the curricular component of interactivity and use of multimedia resources.

The Morphological Pole is based on the teleology of learning in a virtual environment via web. The purpose of the virtual learning environment is to establish conditions conducive for the development of an area that promotes the dialogue and

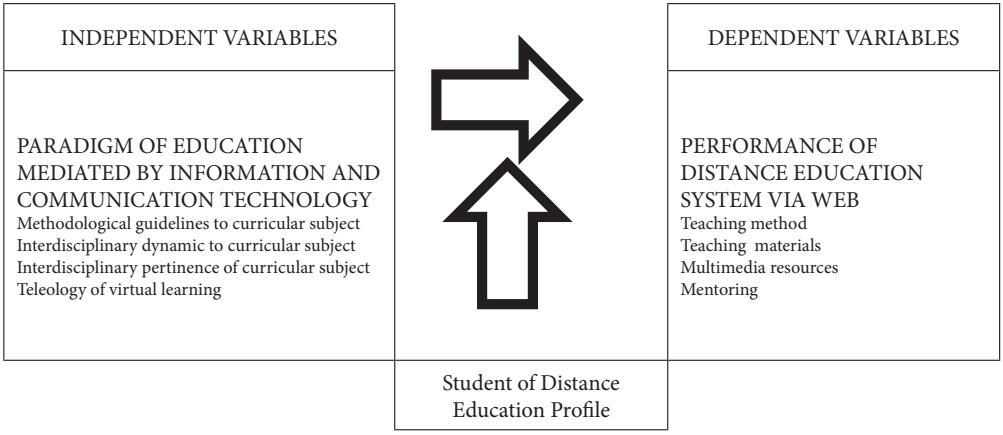
interaction between the tutor and the student, such as the use of multi-media tools, such as to satisfactorily promote the process of teaching and learning.

Therefore, the systemic thinking of distance education through the prism quadripolar method and through a related model, expands the understanding of the education phenomena mediated by information and communication technology by introducing the proposition of unification between intuition and reason, as a synthesis derived from the analytical result of observing reason, expresses the viewpoint of system, and that is the construction of abstract models of observed realities and operant reason, logic, describing analytically the logical structure of the abstract model observed.

The model applied to the investigation

The formal design of the research, for the primary data collection was structured in Distance Education System from the quadripolar model (Figure 2) with the objective of identify, from the point of view of Distance Education students, evidence, i.e. whether there is an association between the paradigms of education mediated by information and communication technology and the performance of the education system via the UEG web.

Figure 3 Paradigms of Distance Education mediated by information and communication technology and the performance of the respective system



Variable of Control

Source: Authors

The results of the empirical research were analyzed by using the statistical inferential. Data were obtained through application of the structured questionnaire to the students participating in the training course for development of teaching materials, with the modality of distance education via the web, in UEG. The analysis was based on the application of

Pearson Correlation technique to determine the degree of association between variables studied. It was also applied to the Pearson Correlation and Cronbach alpha for the validation of the applied research instrument, as well as got the measuring of the degree of reliability of the internal data collected.

From the universe of students surveyed it gave a return of 84 (eighty-four) questionnaires. 4 (four) questionnaires were discarded because of errors and omissions in completing the data collection instrument. Therefore, the sample consists of 72, 73% of respondents referenced in the course, allowing us to infer the representativeness of the sample. The non-respondent group is homogeneous to the respondent group, considering the criteria for defining the sample, i.e., students participating in the course Elaboration and Production of Educational and Pedagogical Material.

The validation test of the questionnaire measured through Cronbach Alpha obtained a grade rating of good consistency. This result confirms the validation and reliability of the instrument for data collection.

Analysis of the correlation between variables

It can be confirmed the existence of the degree of positive association between the variables of the construct, paradigms of education mediated by information and communication technology and the performance of the distance education system via web, from the conceptual model called distance education system from the standpoint of the quadripolar model. To infer the degree of association between the explanatory variables, paradigms of mediated education for information and communication (VI) technology and performance variables explained the distance education system via the Web (VD), It was made the multiple correlation between the designated independent variables and methodological guidelines for curricular subject (VI.1); dynamics of interdisciplinary curricular subject (VI.2); interdisciplinary relevance of curricular subject (VI.3); teleology of virtual learning

(VI.4) and the dependent variables named teaching method (RV. 1), educational courseware (VD. 2), multimedia resources (VD. 3) and mentoring (VD. 4).

This analysis got the following results:

a) the correlations are all significant at $p \leq 0, 05$, albeit with different intensities between them. Therefore, it is inferred that there positive association between the independent variables: methodological guidelines for curricular subject (VI. 1), dynamic interdisciplinary the curricular subject (VI.2), interdisciplinary relevance of the curricular subject (VI.3); teleology of virtual learning (VI.4) and the dependent variables of teaching method (VD. 1), educational courseware (VD. 2), multimedia resources (VD. 3) and mentoring (VD. 4).

b) The positive association of the explanatory variable, methodological guidelines for curricular subject and for other variables explained signals the conceptual map of the course and the assignment of multimedia resources have direct influence on the variables performance of the education system via the web. Thus, one can infer the degree of relevance of the epistemological pole to the system of distance education via the web;

c) The explanatory variable of dynamic interdisciplinary of curricular subject has a positive association with the other variables explained. Therefore, there is evidence that the theoretical foundation and build practice, from methodological guidelines from curricular subject, it has direct influence on variables of the performance of distance education system via web. Therefore, it can be inferred how relevant the theoretical pole to the distance education system;

d) The appropriateness of the interdisciplinary curricular subject, explanatory variable, is associated with other variables explained positively. This way, analysis of interdisciplinary consistency of teaching material and the interdisciplinary teaching and interactivity multimedia have direct influence on the performance variables of the distance education system via the web. This is why the degree of relevance of technical pole for the system of distance education can be inferred;

e) There is a positive association between the explanatory variable virtual learning environment and other variables explained. Therefore, the virtual learning environment has a direct influence on the variables performance of the distance education system via the web. Thus, the degree of relevance of morphological pole to the distance education system can be inferred, table 1.

Table 1 – Matrix correlation of multiple independent variables in paradigms of education mediated by information technology and dependents variables performance of the distance education system via web at significance level of 5%

Dependent Variable / Dependent Variable		Performance of Distance Education System via Web							
		V.D. 1 TEACHING METHOD		V.D.2 TEACHING MATERIALS		V.D.3 MULTIMEDIA RESOURCE		V.D.4 MENTORING	
		Correlation	Significance level	Correlation	Significance level	Correlation	Significance level	Correlation	Significance level
Paradigms of education mediated by information and communication technology	VI.1 – Methodological guidelines To curricular subject	Moderate Positive	0,023837	Low Positive	0,023837	Weak Positive	0,023837	Moderate Positive	0,023837
	VI 2 - Interdisciplinary dynamic to curricular subject	Moderate Positive	0,014512	Low Positive	0,014512	Weak Positive	0,014512	Moderate Positive	0,014512
	VI.3 Interdisciplinary pertinence of curricular subject	Weak Positive	0,026781	Low Positive	0,026781	Weak Positive	0,026781	Moderate Positive	0,026781
	VI.4 Teleology of virtual learning	Moderate Positive	0,017317	Low Positive	0,017317	Weak Positive	0,017317	Weak Positive	0,017317

Source: Authors

Conclusion

The quadripolar model applied to the distance education system is a feasible proposal that portrays the perspective of integration of education mediated by information and communication technology and the theories and practices of education. The data from this research corroborates with this assertion, because the construct distance education system under the focus of quadripolar model shows itself consistent when subjected to statistical tests to determine the degree of association between explanatory variables and explained the construct analyzed. The following are the highlights of this research:

a) It confirms the validity of the construct of distance education system from the standpoint of the quadripolar model, by applying the paradigms of education mediated by information and communication technology: methodological guidelines for curricular subject (epistemological pole), for dynamic interdisciplinary curricular subject (theoretical pole), interdisciplinary relevance of curricular subject (technical center) and teleology of virtual learning (morphological pole);

b) The paradigms of education, mediated by information and communication technology, have positive influence on performance distance education system via the web on the issues focused on teaching method in the teaching learning materials, resources for multimedia and mentoring;.

c) In the perception of the students there is evidence that the organization and structuring of a course under the focus of the quadripolar model has positive effect on the teaching and learning process in courses in distance mode via web.

Finally, the results of this research indicate with evidence that the distance education system from the standpoint of the quadripolar model is feasible, with the methodological parameter applied by UEG – Brazil, in the form of courses in distance mode via the web. However, the results obtained in this investigation should not be universalized without prior promote widespread application in other systems education in distance mode. Therefore, it is recommended that the reapplication of this research in other education institutions to serve as a comparative basis for new studies.

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Capabilities and innovation in the tourism sector in Goiás/ Brazil: focus on the local knowledge

Carla Conti de Freitas
Renata Lebre La Rovere

This chapter presents part of a thesis research on the creation of knowledge in the tourism sector in Goiás / Brazil, which analyzes professional skills necessary for the development of this industry and highlights the role of knowledge in the building of these capabilities. As theoretical support we elected the studies on knowledge based economy and innovation, which seeks to understand the demands on training in tourism from the development of the sector.

Current studies on companies, human capital and technology put the spotlight on the importance of knowledge for firms. Evolutionary or neo-Schumpeterian studies treats businesses as organisms in an environment that can be compared to the nature environment. The development of this environment is explained by the mechanisms of generation of variety, selection and replication of the fittest (Nooteboom, 2006). Thus, knowledge is critical for businesses and it allows generating variety through inventions, it contributes to the adequacy of the company to the environment by developing innovations and it establishes competitive advantage through innovation diffusion. In the neo-Schumpeterian conception of business development social capital aspects related to investment are also considered (Putnam, 2001) and highlight the "learning processes in the economy and society as a whole [...] and how different manifestations of culture are appropriated and

used by different societies and economies, aiming at incorporating them into their innovative activities" (CASSIOLATO, 2010: 6). Since innovation is an integral part of the movement of knowledge creation in the company, it depends on the existing knowledge and encourages learning (Lundvall, 2007), the innovation process can be understood as an interaction, non-linear process both technical and social between firms and context.

Applied to the tourism sector, the evolutionary view of the firm leads to the hypothesis that a training for business innovation in this sector involves the absorption and generation of knowledge about the area. Put in another way, in the tourism sector, the company needs to gather skills that enable not only to understand the region in order to present it to their customers, but also to mobilize the capital needed to take advantage of region's resources.

To develop this analysis, the concept of learning region (Rutten; Boekema, 2007; Boekema, 2000) is considered and "explains the regional learning, the process of creation of knowledge between actors in the region, considering the characteristics of the region, its actors and the relations between them" (Boekema, 2000: 276).

Thus, this discussion aims to contribute to the study of training in the tourism sector, considering the knowledge produced in academic context, businesses, government and research institutes, and to analyze whether the training offered generates knowledge that translates itself into innovative capacity in the activities of lodging facilities in the tourist regions of Goiás/Brazil.

This sector was chosen because it has shown significant growth in the state of Goiás. The number of formal jobs in tourism activities in the lodging facilities in Goiás, for example, grew by 32.33% between 2005 and 2010, with that the number of workers by education in lodging activities facilities reveals that the predominant schooling of workers in this sector is in elementary and secondary level. According to the report of the Observatory (2012:74), "the general profile of workers in accommodation activities in Goiás state follows the national standards, for example, women (56.82%) aged between 30 and 39 years (31.76%), with secondary education (40.05%) and receiving between 1.01 and three minimum wages (80.88%)."

The tourism sector in Goiás

The research underlying this discussion began with a survey of the characteristics of the tourist regions of Goiás / Brazil in order to identify what skills would be needed for capacity building of local actors. Among the activities of the tourism sector, we consider the activities of lodging facilities in two of the nine tourist regions of Goiás: Region of Waters and the Region of Gold.

The choice of the Region of Waters and the Region of Gold was due to the importance of tourism in their economies because the cities that comprise these regions are among the ones that collect most state taxes in the tourism sector. The choice of cities considered the economics and the geographical limitation of the study.

Each region is characterized by its tourism potential. The Region of Water includes activities related to the thermal waters and water sports and its main economic activity is related to the service sector, especially the tourism sector. It includes the following cities in Goiás: Caldas Novas, Rio Quente, Buriti Alegre, Itumbiara, Cachoeira Dourada, Inaciolândia, São Simão, Lagoa Santa. As economic activities in this region, we highlight the activities related to construction, power generation and tourism. The Region of Gold includes six cities: Cidade de Goiás, Pirenópolis, Jaraguá, Corumbá, Cocalzinho, Abadiânia, and encompasses activities related to historical and cultural tourism and ecotourism. Two cities in this region were considered in this study, and the main economic activity is agriculture in the first and in the second, and extraction of stones, which are used in construction. In Table 1, we observe the characteristics of the studied regions:

Table 1 – Characteristics of the tourist regions of Goiás

	Region of Waters	Region of Gold
Cities considered in the research	Caldas Novas Rio Quente	Pirenópolis Goiás
Main touristic features	Thermal waters Water parks	History Culture Environment
Main economic activities	Constrution Energy Tourism	Extraction of ornamental stones Agriculture

Regarding the number of employees and establishments in the industry in recent years, the Region of Waters showed an average growth of 65% in the number of workers and 75% in the number of establishments. On the Region of Gold, one of the cities surveyed grew by 76% in the number of formal jobs and 72% in the number of establishments in the same period. In 2012, the number of formal workers was 5,451 in the Region of Waters and 679 in the Gold Country and the average occupancy rate for lodging facilities in the region was 50% and 30% of the water on the Region of Gold (IPTUR / Goiás 2012). Table 2 shows the growth of the tourism sector in the studied regions in recent years:

Table 2 – Growth of the tourism sector in recent years

	Region of Waters	Region of Gold
Number of workers in the tourism sector	65%	76%
Number of establishments	75%	72%
Average occupancy rate of lodging facilities	50%	30%

Fonte: IPTUR/Goiás, 2012

Besides the characterization of the surveyed areas, we aim to present and analyze data from interviews with key actors of the higher education institutions, enterprises and public agencies. In this sense, we interviewed coordinators and/or professors from the tourism graduation course. In the public sector, we considered those actors who are part of institutions like Municipal Tourism and Municipal Tourism Council – COMTUR. In the private sector, we considered hotels managers and/or owners.

For the analysis of the information obtained in the interviews, we considered the method of content analysis, suitable for qualitative studies like this, and a specific program for qualitative analysis, web QDA that assists in the organization of the information used.

Some documents such as audios and transcriptions were transferred to the webQDA program and they were considered as internal sources. By considering the content of the interviews in full, we opted to encode transcripted text and not the audio itself. However, the transcriptions of the interviews were kept in the program file.

The trajectory of the tourism sector in Goiás points to the importance of the sector in the current context, but reveals the needs and weaknesses. Among these needs and weaknesses, you can consider professional training, informality in labor relations, low recovery and low paid professionals.

Whereas training in the tourism sector can contribute to the creation of knowledge and innovation in the sector, the interview involved actors from different sectors because the study considers that the ability to engage in the region can build a stock of social capital in the region (RUTTEN; BOEKEMA, 2007: 113).

The questions show us a broader ongoing study on knowledge and innovation in the tourism sector in Goiás, which considers the responses on the necessary professional capabilities in this sector, the importance of learning and new knowledge creation in the region and innovation in both regions.

Capability required for professional in the tourism sector – learning

As the necessary professional skills, participants highlighted language knowledge and local knowledge. Knowledge of language refers to the development of communicative competence and it relates to learning. The local knowledge addresses issues to the cultural, environmental and social aspects in the region.

Regarding knowledge in languages, it is noteworthy that, although present in daily life and training, there are many difficulties with foreign language reflecting on professional practice and development of the sector, since it has been a professional limitation in the area, according to the participants. Among the difficulties with language, the terms related to standards and use. In both cases, these difficulties diminish access to information and dissemination of knowledge. An exchange of information generates knowledge and consequently may generate innovations in the sector. Companies' growth do not go well if there is no interaction between the workers or if the relationship between them shows difficulties in communication. However, if training is important for professional development, it can help to minimize problems and create solutions.

Both the private sector and the public sector recognize training in languages as fundamental. In college, actors believe that language empowerment is fundamental and composes the curriculum of tourism from the disciplines as Portuguese,

Communication and Foreign Languages. When we asked a professor who participated in this survey about the necessary skills for the professional she emphasizes:

> No doubt languages. It is the necessary training in languages and tourism professional has to know how to deal with the local community. Knowing how to work, to educate the local community to receive tourists.

The professor argues that mastery of the language is important both for the professional practice of the company as to integrate with the community, since the agent can mobilize the local community to the importance of activities in the tourism sector for the city, when developed the communicative ability.

The three segments investigated in the research also consider the difficulties and limitations in relation to foreign language. On the Region of Gold, survey participants consider the lack of knowledge in foreign language a common limitation among professionals in the region and highlight the need for professionals with this skill in activities related to hotels and trade. The public sector has mobilized itself and it offers through The City's Tourism Bureau courses in languages and Information Technology.

In the Region of Waters, the provision of language courses for professionals already working in the sector in order to minimize the difficulties, also occurs because the cities receives foreign tourists and needs professionals who may communicate with them, serve them well. For the public manager, the city created "an English course and a computer course, [...] we innovate thinking that after two or three years we can have people speaking English, Spanish, trained in computers, here within the city".

In the two studied regions, hotel managers recognize the importance of this training. In one case, the manager says that there is an incentive for professionals: "Today we have an incentive to those who speak two languages. However, we had to create it because that attractive person had to speak English. He had no differential, and we have created this differential. The person who speaks English has a different benefit. "To another manager, this training is highly valued, because having a bilingual staff is a competitive advantage in the hotel.

The importance of knowledge of the region in creating new knowledge – innovation

Participants highlighted the importance and need of local knowledge for the development of the sector and the development of the region's workers. For Boekema and Rutten (2007, p. 153)

> local knowledge based on regional culture and the intrinsic human characteristics is key to understanding the spatial concentration of economic activities and the ability of people to develop competitiveness, especially regions that are able to connect this local knowledge with global networks and face the future and favorable condition.

It is noteworthy that local knowledge covers the issues of the local culture. In addition, how local people deal with existing knowledge and the creation of new knowledge in the region. To Rutten and Boekema (2007: 153), "the local culture can contribute to the creation of knowledge and learning. Learned skills, habits, routines and customs preserve knowledge, especially tacit".

Participants highlighted the importance of local culture and the concern that activities of the tourism sector does not consider the local culture, especially in the region of the Waters, characterized as mass tourism. For the participant public officer, "the city [...] had a question of acculturation in popular culture. I realize this, it is easy to see in the gastronomy; in the attitudes and the exclusion of local culture and the foreign culture prevails."

For the private sector, there is an appreciation of the share capital, highlighting the characteristics of the local people. For the manager of a hotel, "to highlight the local culture, enhancing capabilities, enhance the strengths of the local culture is very important; you create the identity of your hotel, which is the lifeblood of your hotel." However, there is a need for building organizational capacity, as indicated by the manager as follows:

"The soul of the hotel is the servile spirit of employees. So, for example, here [...] people are extremely receptive and warm, so I do not have to play with it, I have to increase it even more. I have to give opportunity for them to improve it. On the other hand, the organization side is extremely weak. Therefore, what I did. I let that issue to develop itself because it really is kind of innate in Goiás, somewhat cultural, they are

very receptive, and I did, started to place order, I started putting rules, began to establish some standards and procedures, some foci because it was something kind of left out."

For the university professor interviewed there is enhancement of professional training, but the local people have not realized this and describes:

> There's a problem that is sui generis feature because the city does not offer training first, then it does not offer value to the people who were trained. Nowadays you offer training, there is a recovery, but people do not seem to want. This has been, for me, a very serious problem because as you have a mindset, much of the interior, which works based on the indication, on the years of experience, rather than in training. Outsiders, non-local graduates of universities are seeking out this professional qualification. However, local people have not agreed to that yet.

This impression presented by the professor confirmed the position of a manager of another hotel highlighting that although the professionals do not have training in university, their dedication to the company makes all the difference. The professionals' promotions occur due to their relationship with the company and not for their academic training.

> We don't have academically qualified professionals speaking in terms of tertiary education or a graduate degree, something like that. I am the only one who has it, my employees are qualified by experience, my reservation manager is a former receptionist, my housekeeper is a former maid, my manager is now a former cook.

These results put the spotlight on the fragility of relationships that constitute social capital in the region of the Waters, which has impacts on training, because the capital when facilitates cooperation and communication, "is a necessary precondition for localized learning. Only by having a stock of capital, allowing cooperating and communicating, a region may socially finance technological learning" (Putnam, 2001, p. 224).

Social capital is important for the establishment of learning regions and consists of social relations between agents to enable cooperation and communication between institutions (Putnam, 2001). In the Region of Waters, although this need is expressed in answers given by different actors, we may notice that this action to enhance communication and cooperation between university, the public sector and

the private sector does not happen. This is partly because of the region's condition of competitiveness does not focus on knowledge but on the depredatory exploitation of the product considered the main attraction of the region: the thermal waters.

Although the actors organize themselves around the core product for many years, the area was not concerned with the construction of knowledge about this product. The activities of the region's tourism sector seem not to value an organization through a cooperative network among local actors, that facilitates the processes of learning, innovation and the consequent diffusion of knowledge by not considering that " these networks provide the creation of a knowledge that is territorially specific " (KLIN, 2001, p. 39).

On the other hand, in the Region of Gold, the relationship with the local culture and local knowledge is different from the region of the Waters. As the tourism industry is mainly from the historical and cultural issues, there is an appreciation of local culture and knowledge by local people. There is a concern in generating knowledge in the university that brings opportunities to improve social and environmental conditions related to the tourism sector.

The academic final papers the students developed, in which they discuss and present possible solutions to local problems, represent the knowledge built from the local needs. The coordinator of the Tourism presents two examples.

The first relates to livestock in the area of environmental protection. He said the students who had rural property in this area, changed the economic activity from knowledge about the hazards of this activity to the site. They said that "After the course, they stopped raising cattle and are implementing ecotourism in the locality, i.e., they already took the cattle of the APA [area of environmental protection] that runs the Park of the Pyrenees".

The second relates to the first economic activity of a city that is the extraction of stones, which causes an environmental problem. From the knowledge generated in the university's learning of local needs, some students developed, he said, " the design of a machine that will grind the rest of the stones, those smaller pieces of stones will turn to sand, i.e., they will take visual pollution that exists today of mountains of waste rock and will avoid dredging of rivers. Therefore, although slowly, this concept is created".

There is an appreciation of the interaction between the university and the public and private sectors, although there are some limitations to a more effective communication and interaction. What is noticeable is that both the public sector and the private sector absorbs and values professionals trained by the local university.

Thus, the relations that constitute the social capital of the region seem to be more developed. Table 3 below presents the results:

Table 3 – Summary of results

	Region of Waters	Region of Gold
Need for Training / Learning	Foreign Language	Foreign Language
Perception of the relationship between knowledge and local culture and innovation	Considered important but it is not implemented in the activities.	Considered important and is implemented in the activities
Nature of capital	Weak	Strong

Source: The authors

Conclusions

The study of knowledge creation in the tourism sector in Goiás assumes that regional learning is important for the development of companies. When the tourism companies mobilize the social capital of a region, acquire necessary skills to enhance their products and services.

In this research, we realize that tourism companies in Goiás are engaged in this learning process as they promote situations where workers give opinions and contribute in solving problems in everyday business, and that the training of tourism businesses collaborate to develop their skills by promoting the sector's activities and the enhancement of social capital. However, the development of such skills is still timid given the difficulty of the relationship between the public and private sectors, and university, in order to promote the growth of the region.

Studies on the Region of Waters and the Region of Gold show differences between them. The university training offered in the region is able to generate knowledge that translates into innovative capacity in activities of lodging facilities in the Region of Waters. However, companies in this region understand that this contribution could be bigger if institutions established a cooperative relationship to the more focused hospitality or development of events and practical activities as junior business activities. Thus, this region's social capital needs to be developed.

In the Region of Gold, the interaction between universities, businesses and the public sector can be shown more intensely and this contributes to providing capital appreciation and promotion of the sector's activities. However, this region also needs to better develop its social capital, because there is an important difference in the actions of the two counties as for the interaction and cooperation between the sector's actors, hindering the creation and dissemination of knowledge and the consequent improvement of individuals and businesses.

In short, the studied regions need to develop themselves in relation to claims in the social context and promote actions that manage policies for valuing professional training in different instances. Policies should develop joint actions to encourage learning, develop the ability of interaction and communication that are so important for the development of enterprises and workers in the tourism sector.

The analysis of the interviews shows that, as suggested by Rutten and Boekema the learning relationships in specific regional contexts have to be understood so that training policies be developed for companies. The results also show differences in the degree of social capital development of the regions, which is important to take into consideration in the formulation of policies for the sector.

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