

# The Appraisal of Scientific Documentation/Information as a Methodological Operation: Application Criteria and Parameters

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## Abstract

Evaluation in the context of information services has been carried out essentially in three distinct areas: the evaluation of services, the evaluation of information retrieval and the evaluation (appraisal) of information flow. This last aspect, especially applied to archives, aims to decide the destination of information after a few years of current use, seeking to make eliminations that considerably free up the information storage space. In this paper, evaluation is approached not as a practical or merely technical procedure, but as a methodological operation applicable to information in any production and use context, within the framework of information science, an area in which we integrate archivistics as an applied discipline. Appraisal does not, therefore, have an end in itself, disconnected from a broader method that associates the comprehensive or scientific aspect with the applicational or technical one, as it is appropriate in an applied social science such as Information Science.

Starting from the appraisal model, developed at the University of Porto, Portugal, criteria and parameters are set out to, in an objective way, moving towards practical application, taking into account the life cycle of information, the renewal and obsolescence of knowledge and the importance of memory for the long-term preservation.

## Introduction

The problematics of information evaluation has been analyzed by the authors at various times and has already given rise to some works, which form the basis for the synthesis developed in this text (Ribeiro and Silva 2004; Silva and Ribeiro 2014).

Looking at evaluation procedures in the field of information science (IS), it can be observed that there has been a dispersion of criteria and parameters associated with practical procedures, which are 'closed' in diverse approaches to information and information services. This dispersion, which includes several facets that can be evaluated, can nevertheless be systematized and grouped into three major areas of specific application, namely:

**1. The evaluation of information services' performance**, an approach that has been accumulated for decades and is closely related to the quality of Libraries, Documentation Centres and Information Services functioning. This aspect of evaluation is based on theoretical and practical references that are not specific to IS, but rather interdisciplinary in nature. In fact, the theoretical foundations or guiding principles for the practice of evaluating information services should be sought in administration and management sciences. Evaluating the performance of information services is, in essence, no different from evaluating other services, despite their own specificities which need to be recognized, but which also exist in other types of services, be they in the financial, commercial, industrial or cultural areas.

**2. The evaluation of the effectiveness and efficiency of information retrieval**, provided by inventories, catalogues, databases, in short, all the information access tools. In this dimension, the literature and practical work produced emphasize the criteria and models designed to analyze and

evaluate the organization and representation of information, that is, the quality of its technical processing measured according to the specific users' needs. The dimension of the specificity and effectiveness of representation/search tools is a facet of the evaluation perspective referred to in 1, since the performance of information services involves, among many other things, evaluating the tools that make it possible to retrieve information. But in practice, this aspect of information systems performance has been studied as a single variable, quite autonomous and subject to very specific evaluation criteria and parameters.

**3. Evaluation of the *information flow*** of any kind of entity/organization, produced/received and accumulated organically, that is, in the course and as result of an activity, with a view to preserving continuous information records and eliminating what does not objectively need to remain in present and future memory, thereby thickening and blocking it. This third area is the one we are most interested in addressing here because we believe it is, from a theoretical-methodological point of view, a priority within the scope of research activity in IS. Evaluation work and studies in this area have mainly been carried out in the field of archives, but we believe that the evaluation of information flow should be extended to all contexts that generate, produce and accumulate information, and it is in this sense that we present a new theoretical-practical evaluation model.

### **Theoretical-Methodological Framework**

It is not the purpose of this text to provide a detailed explanation of the theoretical-epistemological foundations supporting the scientific-informational paradigm within which IS is situated, according to how it is conceived and practiced at the University of Porto (Silva and Ribeiro 2002). However, in broad terms, it is important to highlight the essential pillars that support this perspective: the assumption of *Information*, and not the document, as the object of work and study; the adoption of the *quadripolar research method*, developed within the framework of the social sciences; and the preference for *system theory* as an interpretative tool and reference for any scientific (pure or applied) research.

Starting from the following definition, we must value certain aspects of the information itself that have been disregarded or even ignored in a documentary approach:

*Information* is a structured set of codified mental and emotional representations (signs and symbols), modelled with/by social interaction, and capable of being recorded on any material medium (paper, film, magnetic tape, compact disc, etc.) and, therefore, communicated in an asynchronous and multidirectional way (Silva and Ribeiro 2002, 37).

Considering information as a human phenomenon whose genesis occurs in the brain, closely linked to the individual action in a socially contextualized manner, the study of this phenomenon must lead us to cognitive and sociological approaches, in clear interdisciplinary alignment with IS, a perspective that has been largely absent from the so-called documentary sciences.

Research on the conditions that generate information require valuing the organic context associated with it, which calls for a deep redefinition of theoretical perspectives and technical procedures. On the other hand, the knowledge of the conditions under which information is sought and used, while also requiring interdisciplinary studies (behavioral, psychological, and sociological), invokes the need for profound revisions in library and archival methods related to the treatment of information, which we believe can only be re-examined within IS theoretical framework.

However, the definition of information alone is insufficient for characterizing it as an object of study, and it must be complemented by a statement of its inherent properties/attributes, namely:

- *structured by an action* (human and social) – the individual or societal act structurally establishes and models information;
- *integrated dynamically* – the informational act is involved with, and results from, conditions and circumstances both internal and external to that action;

- *has potentiality* – a statement (to a greater or lesser extent) of the act which founded and modelled the information is possible;
- *quantifiable* – linguistic, numeric or graphic codification is capable of quantification;
- *reproducible* – information can be reproduced without limit, enabling, therefore, its subsequent recording/memorization;
- *transmissible* – informational (re)production is potentially transmissible or communicable.

If the proposed definition of information and its properties have consequences at various levels, the adoption of the ‘quadripolar method’, designed by P. De Bruyne, J. Herman and M. De Schoutheete as a qualitative research dynamics is no less significant and has implications of various kinds (De Bruyne, Herman and De Schoutheete 1974). The following diagram (Figure 1) shows the interaction of the four poles of the methodological device. The application of the quadripolar method illustrated in Figure 1 shows the interaction and simultaneity of the poles, which is typical of exploratory work on human and social phenomena and problems.

The research dynamics results from an interaction between four poles – *epistemological, theoretical, technical, and morphological* – allowing for a continuous projection of interpretative paradigms, theories, and models in the operationalization of the research and in the presentation of its results.

The ***epistemological pole*** – the scientific community of information professionals, their schools, institutes, working places, with their own political, ideological and cultural references – operates the permanent construction of the scientific object and the definition of the boundaries of the research problems. The discursive parameters are constantly reformulated, as are the paradigms and scientific criteria (objectivity, reliability and evaluation) which guide the whole research process. Empirical procedures and archival knowledge gradually substantiate this pole, which is by no means static but, on the contrary, must be subject to periodic reflection on the occurrence, or otherwise, of epistemological continuity or gaps.

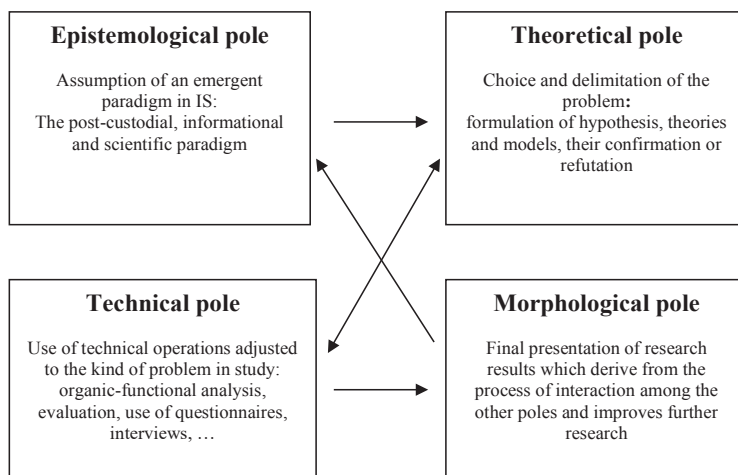


Figure 1. Schematic representation of the Quadripolar Method and the interaction of the four poles

The *theoretical pole* operates the rationality of the subject (who knows and approaches) over the object, as well as the postulation of laws, the formulation of hypotheses, theories and operational concepts and the consequent validation or refutation of the “theoretical context” elaborated. This pole supports the technical and instrumental component and gives meaning to the presentation of results, which substantiate the morphological pole. Although there are different theories and models that support ways of thinking about the informational phenomenon/process, we express our preference for System Theory, originated from the studies of Ludwig von Bertalanffy in the 1920s, as it integrates a holistic vision and fits well within the complex and diffuse world of information, as evidenced by several practical applications of their theoretical approach. *General System Theory* (Bertalanffy 1976) has been widely applied and developed to the point where it is now more appropriate to speak of “systems thinking,” which is primarily a way of conceiving reality, whatever it may be (Mella 1997).

On the ***technical pole***, the contact with objectified reality is operated through instrumental application, thus verifying the validation capacity of the methodological mechanism. This pole includes three major operations (Lessard-Hébert, Goyette and Boutin 1994):

1. *Direct and indirect observation* (of cases or variables) – comprehensive collection of historical-institutional, legal, and regulatory elements, and the description of the nature and internal functioning of any information system (case/cases) or any supra/inter-case subject (variable/variables) through various techniques such as surveys, interviews, participant observation, and the subsequent elaboration of record forms.

2. *Experimentation* – in a controlled, closed, and artificial field (as opposed to the real, open, and uncontrolled field of case studies), which is enhanced in a laboratory or computer simulation setting, a clear problem formulation, the description of analysis techniques, and the presentation of the instruments, equipment, and scientific means used are essential. If based on sampling, it relies on statistical analysis according to logic hypothesis testing.

3. *Retrospective and prospective analysis/evaluation* – a) general statement: submit the results of observation and/or experimentation to a rigorous examination allowing for generalizations and the establishment of scientific analogies; this operational investment leads to the confirmation or refutation of the concepts in use, the hypotheses and theories prepared for each research project, and, ultimately, the general principles set out in the theoretical pole; b) complementary statement: involves subsidiary but essential operations, which even integrate observation, such as description, content analysis, indexing, and authority control; all these operations contribute to the (re)organization of information understood in a strict sense, highlighting the intrinsic properties and intervening in the information process (memory, transfer, and use).

On the ***morphological pole***, the results of the research carried out are formalized through the representation of the object of study and the description of the whole research process which enabled the scientific

construction around it. It deals with the organization and presentation of data, objectively checked on the theoretical and the epistemological poles, what shows the interactive character of the quadripolar method of research.

Since the epistemological (paradigmatic reference) and theoretical poles decisively shape the applicational component of IS, which is fully embodied in the technical and morphological poles, it is evident that the ongoing paradigm shift, and the theories adopted (System Theory in this case) require a revision of the technicist framework that has been the essential foundation of the applied disciplines (as archivistics) now integrated into IS. The quadripolar method implies a holistic vision and a dynamic research process in continuous evaluation and refinement, a perspective that gives meaning to the construction of scientific knowledge.

The quadripolar research method is, at our view, the most suitable device for the knowledge of informational phenomena, as it does not limit itself to a merely instrumental view. The foundations of this proposal are explicitly anti-positivist and adjust themselves to the demands of research that is both possible and advisable in the field of human and social sciences. It is also important to emphasize that this proposal recalls the essential idea of 'method' as a complete set of steps necessary for identifying the problem, formulating hypotheses, adopting theories and/or models, verifying these through operations or technical procedures like observation, surveys, and data quantitative analysis (statistical), semi-structured interviews, content analysis, etc., and the final formalization of results. Thus, method refers to a reflective and critical discourse about the research path, not the instrumental and reductive sense used to explain the concrete procedures employed.

Another important advantage of the Quadripolar Method is that it was conceived as a non-linear (a sequence of steps) approach. Unlike Quivy and Campenhout (1998) seven stages, the application of quadripolarity can only be in a spiral and there is also an interactivity and simultaneity between the poles, which is a characteristic of exploratory work on human and social phenomena and problems.

### **Evaluation as a methodological operation: a new theoretical-practical model**

The works and studies on the evaluation (or appraisal) of informational flow have been, as mentioned above, primarily developed within the field of archivistics. However, it is our understanding that evaluation can (and should) be extended to all contexts that generate, produce, and accumulate information. That is, evaluation can be carried out within any active or deactivated system, following the same methodological procedures.

A detailed analysis of the issue of appraisal in archives, or how this pragmatic task – driven by the urgent need to eliminate documents to free up space – has been carried out, is beyond the scope of this text. However, it is important to briefly outline the assumptions on which this task has been based so that the proposal we present for a new theoretical-practical model can be better understood.

Archivists' concerns with appraisal were more strongly felt during the period between the two World Wars. These concerns arose due to the significant increase in documentary production during and after the Great War, which led both administrations and archivists to face the problem more decisively than before. Some national trends emerged, with different approaches to this issue. For example, in England, the traditional approach was to destroy documents that had no legal, historical, statistical, economic, or official value. It was understood that archivists should not be involved in the destruction of documents, as it was not part of their responsibilities. The task of elimination was to be left to the administrations themselves (Kolsrud 1992).

On the other hand, the German tradition prioritized preservation over elimination. Consequently, it was believed that administrations should not be the unique judges when it came to document selection, as archivists should have a decisive influence on appraisal. This is a position opposed to the English one, which left decisions to the documents' producers (Kolsrud 1992).

These essentially empirical positions were confronted, starting in the 1950s, with a more systematized perspective that sought to introduce theoretical justification into the guiding principles of appraisal. This posi-

tion was defended by the American Theodore R. Schellenberg in a study that became the primary reference for American archivists (Schellenberg 1956). The author established a primary value (for the producing entity) and a secondary value (for research purposes). Additionally, he introduced the distinction between “evidential value” and “informational value,” as two aspects of secondary value, which to some extent incorporated the criteria used in Germany to guide appraisal. In fact, this American perspective represents a synthesis of the English and German positions and seeks to achieve a very specific objective: to preserve as much information as possible while keeping a minimal number of documents.

Schellenberg’s perspective, although subjective since it does not allow for a scientific and rigorous determination of the criteria guiding the attribution of secondary value, has been undeniably important. Since the mid-20th century, it has shaped appraisal in archives. Despite being challenged by various authors, it is still the expression of the dominant paradigm in archivistics and continues to guide appraisal practices worldwide, even being enshrined in manuals and dictionaries considered “classic” in the archival field.

The criticisms of Schellenberg’s positions have been taken up in recent years by different “schools” of archival science, with particular emphasis on Canadian schools, some in the United States, and various European “trends.” The journal *Archival Science* has given expression to the most recent perspectives in archival theorization and, consequently, has also addressed the issue of appraisal, making it an important reference for understanding the changing perspectives on Schellenberg’s ideas (Archival Science 2001-2003). However, despite these attempts at theorization, it seems that, at its core, there is no break with the traditional paradigm, and from a theoretical-epistemological point of view, there are no foundations developed that distance archival science from the technical-custodial phase in which it has been since the end of the 19th century (Ribeiro 2001).

Thus, we begin with the studies developed in the field of archivistics to analyze, expand, and reformulate an aspect of appraisal that, from a theoretical-methodological point of view, can be considered the first and the

most essential within the research activity of IS. Studying and monitoring, with theoretical-practical solutions, the creation, circulation, storage, retrieval, and dissemination of information, understood as a human and social phenomenon (and process) for which we already have an operational definition, is the core mission of IS. It is not surprising, therefore, the importance we attach to the evaluation of informational flow, as one of the key operations of the quadripolar method's technical pole.

We will present the specific *modus operandi*, but first, it is important to highlight some basic assumptions without which the application perspective we propose cannot be understood.

Firstly, we do not restrict the flow of information to the administrative and bureaucratic processes emphasized by archival science when it underscores the need for appraisal of accumulated documentary masses and defends the so-called "three ages theory" (current, intermediate, and final or historical) as a method and criterion for selection and sorting. Any type of information, as long as it is created and flows in one or more organizational or combinatory contexts, should be evaluated using the same framework (with additional indicators and categories). Whether dealing with documentation produced, received, and accumulated by a department, division, or office of any governmental entity (central or local), we can and should apply the same evaluation framework as that used for documentation created and circulated electronically or in print on a limited range of specialized topics relevant to a manufacturing unit, laboratory, or commercial entity. And by applying the proposed procedures, we will reach a decision on what should remain in the corresponding memory.

Secondly, the classic and restrictive idea that we can only eliminate internal and official documentation produced by administrations (such as correspondence, accounts, reports, etc.) and not the documentation that is edited, collected, and accessed in libraries and documentation centres makes no sense in the context of the paradigm imposed by or shaped by the Information Society in which we live and are increasingly immersed. This paradigm requires a radical rethinking of the heritage conception (static and supposedly autonomous from the daily activities of social and

historical actors) that archival science continues to claim as its legacy and standard-bearer through the “three ages theory.” Documentation produced and accumulated must be appraised – and this point is consensual – but not as an end in itself determined by almost exclusively historicist interests. A complete shift in this perspective is necessary, and this implies embracing evaluation as a key element of a broader and more consistent theoretical-methodological framework. It also implies recognizing that the evaluable object is not something merely tangible and physically scattered across miles of shelves, cabinets, and storage rooms but the natural and endless product of the human mind (phenomenon and process) referred to by the term/concept “information”.

Thirdly, the dynamic criteria that give meaning to informational flow are centred on the memory of any entity that produces, receives and accumulates information. For this reason, the concept of institutional or organizational memory (as vital as personal or individual memory) takes on enormous and fundamentally prospective importance. Memory is intimately linked to information, focusing on the present and future: preserving and accumulating information makes sense only to generate, stimulate, and qualify action today and tomorrow. All memory is selective, and organizational and institutional memory must be as well. But selection happens here through two ways: either by randomness, determined by the pressures of everyday life, or by a sense of belonging or pertinence dictated by the essential, structuring, and long-term objectives of the organization or entity. The first route is quite common and characterized by immediacy, lack of planning, and improvisational and opportunistic management. The second one is increasingly recommended by management gurus under various names, expressions, and models, and it truly represents the only guarantee of achieving innovation sustained by experience and accumulated information, filtered through the guiding lines of the long-term mission.

Fourthly, we do not find it consistent or feasible to evaluate informational flow without “configuring” or “focusing” it through a theory and models designed and developed to achieve good and better results. Our preference for system theory is subject to the ongoing demonstration process

in different study, organizational implementation, and research situations. The balance so far, though still in its early stages, is encouraging. Therefore, we find it very stimulating to draw conclusions – necessarily provisional and reversible – on the evaluation of flows within various systemic frameworks – flows in different organizations and entities (individuals, associations of all types, small businesses, etc.) and in non-organizational conditions (so-called combinatory systems subject to the tension and interaction of micro and macro-behavior).

Outlined these basic assumptions, we then proceed to present the evaluation model we developed, which we have already had the opportunity to use and test in various situations along the last two decades, with the publication of the results in some cases (Carvalho 2002; Ribeiro and Fernandes 2003; Fernandes 2004). The fundamental principles of the emerging paradigm of IS, previously summarized, necessarily have several implications for the development of studies and the technical application work, and naturally influence the procedures inherent to appraisal. As we have seen, evaluation/appraisal is one of the methodological operations situated within the technical pole of the quadripolar method.

In fact, applying the quadripolar research method, emphasizing its main operations as previously outlined, focuses on retrospective and prospective analysis/evaluation. Here, *organic-functional analysis* is crucial, as it is an indispensable requirement for achieving a precise understanding of the system's structure and the functions/competencies of its various components. This is the way to make it possible to accurately characterize the production context of the informational reality under study. Often, this analysis must be carried out diachronically to correctly understand the changes in the structure and functions that have shaped the information over time.

Furthermore, analyzing the functional component of the system leads to the implementation of certain operations as regular “prophylactic” measures aimed at optimizing the functioning of the information system itself. Evaluation, a fundamental operation that allows the detection of redundancies and informational “waste,” falls into this category and is the focus of our discussion here.

Based on these assumptions, the proposal of a new model to frame the procedures inherent to the evaluation of information flow rests on several criteria and parameters (see Appendix), which we outline as follows:

*Pertinence*: Literally meaning belonging to the action of someone or some entity, pertinence can be measured, in informational terms, through the triad of essential objectives – reason to exist + organizational structure and competencies/functions + memory – graded at three levels (A, B, and C) corresponding to a direct, indirect, or peripheral relationship between informational acts and the aforementioned triad.

*Density*: Literally the quality of being dense, thick, or compact, density implies, in informational terms, determining whether an act or document is primary/original, with or without duplication/exact copies, or secondary (a summary or synthesis, a part or accumulation of primary/original information), also with or without duplication/copies.

*Frequency*: Defined as the repeated occurrence of acts, frequency is understood here as the quantification of the periodicity of information use/access, whether during the production/reception phase (the genesis or decision-making phase, also called the current or administrative phase) or in the immediately subsequent phase (the stable, post-genesis, and post-decision phase, which is perennial and definitive, as well as progressively more open to external access to the information system). The results obtained in both phases can provide a comprehensive understanding of whether an “intermediate use” exists (a highly debatable notion) and whether it is true or not that the administration completely loses the need for access to information with more than forty years old.

The first parameter – *pertinence* – requires an exhaustive and in-depth collection of data essential for a structural (organic-functional) characterization of the organization (or entity), which is often illustrated through organizational charts and flowcharts. It also demands a thorough analysis/evaluation, which the IS researcher or IS specialist must undertake. This role positions them as the most suitable interlocutor in a broad interdisciplinary framework, where, for instance, administrators, managers, and other stakeholders in the informational and organizational process play a

crucial role. Constructive and dynamic dialogue with these and other agents should be a regular and standardized practice, conducted both informally and formally: easy and spontaneous availability for interviews, responding to surveys, and participating in joint research; and, more formally, integrating working groups.

Within this parameter, three levels are considered:

- *Level A* includes all information directly related to the essential and usually immutable objectives of the entity responsible for the information system. These objectives are typically embedded in its foundational “constitution” and fulfilled through an organic-functional structure that evolves over time but remains consistently focused on achieving these original goals in daily operations.
- *Level B* encompasses information related to what are commonly referred to as “support functions,” such as information produced/received in the management processes of the organization to meet the objectives that justify and legitimize its existence. This includes accounting and financial aspects, human and technical resources management (equipment, support materials, etc.), and a variety of external contacts essential to regular and goal-oriented activities. This level is present in any organized or operational information system.
- *Level C* includes certain informational acts that are objectively marginal or peripheral to the objectives or to the “support operations” of management. It also includes the redundant quantity of documents and series resulting from outdated, routine, and irrational administrative and executive practices still common in bureaucratic, hierarchical, and stagnant organizational models. Inclusion in this third level often indicates the concrete possibility of elimination, although this may be hindered by exceptional results from the *frequency* parameter.

The second parameter – *density* – also plays a decisive role in the selection of institutional or organizational memory. A primary/original

informational act renders its exact duplicate unnecessary, while a secondary act (summary or synthesis, part, or accumulation of primary/original acts) can often be replaced by the primary, except in the case of summaries/files/databases or cumulative types, such as annual reports, which aggregate dispersed information from monthly, quarterly, or semi-annual reports.

Another category of information is *progressive*, which includes certain types of information related to specific functions (scientific and commercial) subject to periodic changes or updates. For example, a commercial prospectus is valid for a campaign lasting months or one to two years, after which it becomes outdated, which makes its elimination inevitable. However, its relation to the pertinence parameter should also be considered to estimate the period of temporary conservation. Therefore, it is both convenient and mandatory in this and all cases to “cross-reference” or relate parameters and levels.

Finally, the parameter *frequency* (rate) of use is considered. This is based on a standard average of 52 requests per year, equivalent to one per week. Below this average, usage is classified as weak or minimal (if fewer than 20 requests), while above it, usage is categorized as medium or high. The interpretation of the rate varies depending on factors such as user identification, justification for the request, and the occurrence of requests within a concentrated or short period (six months, three consecutive months, one month, two weeks, or one week). The results and their implications do not directly influence the choice of eliminable information, as low usage may correspond to a set of primary documents (series or otherwise) of Level A, which require permanent preservation. However, these results are indispensable for understanding the informational process in its intrinsic properties and how organizations “manage” their own memory.

The indicators or parameters outlined must be emphasized and cross-referenced to achieve a global and scientific “reading,” analogous to the statistical insights already obtained through infometric or bibliometric laws. By assigning a weighting factor (1 or 0, where 1 indicates information to be preserved and 0 indicates information that can be discarded) to the three parameters that guide evaluation, it is possible to establish a matrix that typifies the intersections between these parameters. This enables objec-

tive decision-making regarding the retention or elimination of informational memory (see Appendix).

The operationalization of this model has already been tested in various contexts. For this purpose, data collection forms and analysis grids were developed. The results of this practical application have been published in some articles, aiding in the clearer understanding of specific operational procedures. Since it is beyond the scope of this text to develop the practical component of appraisal, readers are referred to available works on the subject (Carvalho 2002; Ribeiro and Fernandes 2003; Fernandes 2004).

## **Conclusion**

To conclude, it is essential to emphasize that evaluation is not exclusive to IS or other social sciences. Nor is evaluation merely a specific task or performance carried out as if following a predefined recipe. Evaluate is, first and foremost, a verb that acquires different meanings depending on its context of application. In a scientific-technical framework, evaluation cannot stand alone as an act or, more accurately, as an operation. This core idea underpins the entire development presented in this discussion: to frame evaluation as one of the pivotal operations within the technical pole of the quadripolar method, tailored to qualitative research in the social sciences (and, consequently, in IS), and to integrate application areas previously treated as independent and fragmented.

Evaluating the performance of services (many institutionalized, others increasingly provided through IT and telematics), the quality (effectiveness, efficiency, and speed) of information retrieval tools (satisfaction or failure in controlled searches, especially in search engines on the Internet), and the circulation, selective retention, and recovery of informational flow – ubiquitous across all sectors, groups, and institutions of human society worldwide – are not distinct activities. They are integral components of a single technical operation, preceded by observation and, potentially, experimentation, culminating logically in analysis.

Among other advantages, the quadripolar method enables technical operations and procedures to be situated within interactive, interconnected polar cores, fostering a productive and effective spiral of scientific advance-

ment.

Through the *epistemological pole*, any individual who studies, investigates, and tests theoretical-practical solutions in the field of IS is compelled to reflect on and understand their limitations. This pole reveals the subtle yet fundamental paradigm shift – essentially, a change in perspective or in the psychological, formative, economic, and socio-political framework.

The *theoretical pole* also precedes and guides the technical procedures of the method. Given that elements obtained through observation, results from various experiments, and evaluation/analysis findings contribute directly to (re)formulating hypotheses and consolidating theories, it is clear that without hypotheses and theories, the scientific study and resolution of any properly identified problem become obstructed or significantly distorted.

Without the *technical pole*, it is impossible to finalize results and ensure their dissemination, discussion, revision, and impact on future research or new research projects. These are facilitated through the *morphological pole*, but it must be clear that evaluation/appraisal as an operation does not occur in IS in an isolated manner or without the intent of achieving a comprehensive explanation or a well-founded practical resolution at the theoretical level.

At a more operational level, the researcher must adopt the role of a constant and continuous creator of tools, fully justified in one project but potentially irrelevant in another. This diversity of technical tools – understandable and desirable – can take on multiple “formats and tones,” yet it fits within the operations of the technical pole, focusing on the phenomenon and process of information in its entirety.

It is, therefore, necessary to distinguish, in the context of evaluation, the feasibility of a uniform matrix designed and applied in the field of informational flow (see Appendix). There exists, consequently, a unity of the object of study and, simultaneously, without any paradox, a diversity of resources within the methodological framework used to study it.

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## APPENDIX

### Evaluation parameters and levels applied to the information flow

Identification of the produced/received/accumulated information and its contextualization:

| OBJECTIVES | ORGANIC-FUNCTIONAL STRUCTURE | COMPETENCES ATRIBUTIONS | ACTIVITIES (procedures / tasks) | SERIES and/or INFORMATIONAL TYPES |
|------------|------------------------------|-------------------------|---------------------------------|-----------------------------------|
| (...)      | (...)                        | (...)                   | (...)                           | (...)                             |

Evaluation parameters:

**PERTINENCE** (to belong, in informational terms, to somebody's or some entity's action)

**Level A** (information directly related to the objectives / organic-functional structure / memory)

**Level B** (information indirectly related to the objectives / organic-functional structure / memory)

**Level C** (peripheral and/or not up-to-date information considering the objectives / organic-functional structure / memory)

Weighting: **1** (level A or B information) or **0** (level C information)

### DENSITY

Primary information

Secondary Information (produced from primary one)

- Partial
- Summarized
- Cumulative

Progressive information (in S&T)

Duplicated information

Weighting: **1** (more dense/complete information) or **0** (less dense/complete information)

### FREQUENCY (of use)

Maximum/medium use - once or more than once a week

Minimum use - less than once a week

Weighting: **1** (maximum/medium use) or **0** (minimum use)

**Analysis of series and/or informational types**

**PERTINENCE:**

Level A \_\_\_\_                      Level B \_\_\_\_                      Level C \_\_\_\_  
Weighting \_\_\_\_ (1 or 0)

**DENSITY:**

Establishment of informational relations to determine density:

**INFORMATIONAL RELATIONS**

| Information to be analyzed                                                                          |   | Related information (1)                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary information ____<br>Duplicated ____                                                         | → | Primary information _____<br>Primary and duplicated information _____<br>Secondary information _____<br>Partial _____<br>Summarized _____<br>Cumulative _____<br>Progressive information (S and T) _____ |
| Secondary information ____<br>Partial ____<br>Summarized ____<br>Cumulative ____<br>Duplicated ____ | → | Primary information _____<br>Secondary information _____<br>Secondary and duplicated information _____<br>Progressive information (S and T) _____                                                        |
| Progressive information (S and T)<br>Duplicated ____                                                | → | Primary information _____<br>Secondary information _____<br>Progressive and duplicated information _____                                                                                                 |

(1) Mention, in each case, the reference of series or informational type related to the information to be analyzed, referred to in the first column

Weighting \_\_\_\_ (1 or 0)

**FREQUENCY:**

- Maximum/medium use - once or more than once a week - **1**
- Minimum use - less than once a week - **0**
- Weighting \_\_\_\_ (1 or 0)
- Decision about the final destination of the information:

| PERTINENCE | DENSITY | FREQUENCY | FINAL DESTINATION      |
|------------|---------|-----------|------------------------|
| Level A    | 1       | 1 or 0    | Permanent conservation |
| Level A    | 0       | 1         | Temporary conservation |
| Level A    | 0       | 0         | Elimination            |
| Level B    | 1       | 1 or 0    | Permanent conservation |
| Level B    | 0       | 1         | Temporary conservation |
| Level B    | 0       | 0         | Elimination            |
| Level A    | 1 or 0  | 1         | Temporary conservation |
| Level C    | 1 or 0  | 0         | Elimination            |

Note: deadlines must be established for temporary conservation of information (schedule of selection) according to frequency of use