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Evaluation of the Brazilian Capes Portal of E-Journals: An analysis of users' barriers and problems

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Abstract: The present research evaluated the barriers found by faculty when searching for information in the Capes Portal of E-Journals. The Capes Portal of E-Journals offers more than 35 thousand scientific journals and is considered the largest of its type in Latin America. The faculty selected for carrying out this research was distributed throughout 17 federal Brazilian universities from the 5 geographic regions of the country. The data was collected by means of a *web-survey* which used a mainly quantitative methodology, with some qualitative data. Four questionnaires were used, containing a total of 71 questions. The current study reports the results obtained for one of the open questions, which asked on the main barriers and problems to use the Portal. The research used content analysis to create categories in the qualitative analysis of the data. For the question analyzed, 4044 messages were received from the respondents. Out of these, 3579 comments (80% of the comments) were selected for analysis because they were related to the difficulties the respondents had upon searching the Capes Portal of E-Journals. The 3579 comments were subdivided into nine initial categories, which were regrouped into three main categories according to their content similarity: (1) Personal Aspects; (2) Aspects of the System and (3) Institutional Aspects. The analysis revealed that Category 3, Institutional Aspects, concentrated the greatest part of the comments (48%), while Category 2, Aspects of the System obtained 42% of the comments, and Category 1, Personal Aspects, had the smallest number of the comments, 10%. The personal factors (Category 1) which users mentioned as responsible for their difficulties in searching the Portal were mostly lack of time to use the system. Few comments (1%) mentioned lack of skills to use computers, the internet and lack of domain of the English language. The institutional factors (Category 3) pointed by the respondents regarded the Portal's maintaining institution (Capes), and the institutions which give access to the users, which, in the context of the present research are the federal universities. In this category were the less than adequate speeds of connection, availability and adequacy of computers, printers, updated software, and rooms in addition to the need for more

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training activities on the use of the Portal and of policies for making the Capes Portal widely known to its users. The aspects pointed out by the users as aspects of the system (Category 2) causing difficulties for access and search of the Portal included the non-availability of the journals or of the full text of the articles searched for, problems related to the usability of the interface and other technical aspects of the system.

Keywords: User satisfaction; User studies; Evaluation of digital libraries, E-Journals, Methodology.

1. Introduction

This research evaluated the barriers and problems encountered by faculty users who seek information on the Capes Portal of E-Journals. The Capes Portal was created in 2000 and can be accessed through the internet at constituted member institutions. Access to the content of its collections is free and open to all faculty, researchers, and students, technical and administrative users in each member institution. And, according to Martins (2006) through a set of licenses acquired from publishers and database suppliers these institutions may have access to the electronic journals and data bases subscribed to. The Capes Portal of E-Journals is the largest of its kind in Latin America (COSTA, 2007), and its collection consists of over 35.000 titles with full-text articles, about 130 databases in all areas of knowledge, eleven patent databases, statistics databases, encyclopedias and technical standards.

For the survey presented here data was collected from faculty members from 17 Brazilian federal universities in the 5 geographic regions of the country. The methodology used was mainly quantitative, with some qualitative data. Four questionnaires were compiled, containing a total of 71 questions, yielding 6.200 responses and with a return rate that came to approximately 42%. The current study reports the results obtained for one of the open questions of the first questionnaire that asked about the main barriers and issues when one uses Capes Portal.

2. Information Behavior

Information behavior is directly related to the characteristics of human behavior when it is related to search, retrieval, organization and use of information (SPINK; COLE, 2006). Wilson (1999) pointed out that information behavior is considered the more general field of research, which encompasses the subfield information-seeking behavior which, in turn, comprises the subfield information searching behaviour. Through that, one realizes that information seeking is a layer in which the user performs the mental processing of the search, and which sets the stage for planning and formulation of the search, and can also be described as the process of intentional search for information to reach a goal before a specific need (WILSON, 2000; CASARIN, 2012; BRUM; BARBOSA, 2009). Information searching is the smaller field, a subset of information seeking that defines the relationships between the user and the information system, with or without an intermediary. Information searching considers the behavior of the individual when performing the search and retrieval of information in a given system. That can be at the level of human-computer

interaction (as for instance: clicking on pages, using the mouse); interaction at the intellectual level (for example, applying search strategies through the use of Boolean operators, deciding on a selection criteria for placement of books on the shelves) up to the judgment of the relevance of the information retrieved (WILSON, 2000; CASARIN, 2012; BRUM; BARBOSA, 2009).

In general, the search behavior begins when an individual realizes that the information he or she has on a subject is less than what is required and then starts to act to find what he needs (KRIKELAS, 1983; CRESPO; CAREGNATO, 2006). Part of the information seeking process is to find and evaluate the quality of information, a major exercise in the work of a researcher. Therefore understanding the behavior of users seeking information from sources, both print and online, has become a matter of increasing importance in last decades (DU; EVANS, 2011)

3. Information barriers

According to Wilson (1999), the search for the satisfaction of the information needs of users can result in success or failure to find relevant information. For the author, a search is successful when the perceived need is fully or partially satisfied, and considered a case of failure when it becomes necessary to repeat the search process (FARIAS et al., 2013).

Users are faced with barriers of various kinds, which are the obstacles that hinder, delay or prevent access to information (SWIGÓN, 2011; SILVA et al, 2007). The barriers may be psychological, demographic, role-related, interpersonal, or environment-related and are likely to significantly influence the information behavior of users. These barriers may lead to stop of the search process and of the use of information (GARCIA, 2007).

4. Methodology

For qualitative data analysis categories were created that describe the content of messages. For the categorization of data, the three stages prescribed by Gil (1994) were used. These are discussed below:

a) Pre-analysis: that was done prior to the reading of the documents with the development of indicators for the demarcation of the texts to be examined;

b) Exploration of material: that is present in coding, classification and categorization of data through grouping comments according to their content and counting the frequence of comments in each category.

c) Data processing: this refers to the presentation and validation of data in tables, charts and figures for easy viewing and interpretation.

5. Data Analysis

For the question analyzed, 4.044 messages from the respondents were received and examined. These messages were classified into more than one category, amounting to 4.499 comments. From these, only 3.579 (80%) were about the difficulties that respondents had to perform a search in Capes Portal. These were selected for analysis.

The 3.579 comments were divided into nine initial categories, which represent and describe the main factors that hinder or impede the search in the Capes Portal. After labeling the data, the initial nine categories that describe the barriers for searching the Portal were regrouped into three higher order categories according to similarity of their content: (1) Personal Aspects; (2) Aspects of the System; (3) Institutional Aspects. It was observed that Category 3 concentrated almost 48% of comments; while Category 2 totaled 42% of the comments and that the category with the smallest number of the comments was Category 1 with 10% of the comments as shown in Table 1.

TABLE 1. Main categories of factors of difficulty in searching the Capes Portal

N.	Category	Subcategories		
			Freq.	**%**
1	**Personal Aspects**	1. Users complain about lack of time to search	294	8%
		2. Users complain about the need of domain of English to perform a search	21	0,6%
		3. Users claim not to have computer or internet skills to perform the search	41	1%
		Sub-Total	**356**	**10%**
2	**Aspects of the System**	4. Users have difficulties in conducting the search and locating of the article	278	8%
		5. Users complain about non availability of journals or of full text of articles	1027	29%
		6.Users complain about the system interface	176	5%
		Sub-Total	**1481**	**42%**
3	**Institutional Aspects**	7. Users report problems to access the system.	913	25%
		8. Users report problems on the infrastructure provided by the institutions	551	15%
		9. Users request wider advertisement and information on the Portal and training on its use	278	8%
		Sub-Total	**1742**	**48%**
		Total	**3579**	**100%**

Category 1 - Personal Aspects

This is the smallest category with 356 (10%) comments containing factors of a personal nature which represented a barrier for searching, such as not having computer skills or English domain, or time available for research. The three sub-categories included in this category are listed below:

1. *Users complain about the lack of time to search*: 8% (294) of the comments reported that respondents do not use the Portal, or do not use it always due to

lack of time to carry out research, mainly because of the accumulation of tasks in their daily work routine.
2. *Users complain about the need of domain of English to perform a search*: This is the subcategory with the lowest number of responses (21) which is equivalent to 0.6% of respondents. Having no command of the English language causes difficulties in using the Portal since most of the collections and journals are in English and so are the interfaces of the systems.
3. *Users claim not to have computer or internet skills to perform the search*: 1% of comments (41) said that respondents do not have computer and internet skills which are needed to use the Portal. Some respondents stated that their lack of computer skills is caused by their older age**.**

Category 2 - Aspects of System
This category concentrates 42% of the comments. The current study identified problems related to the absence of journals and of full text articles in the Portal, difficulties in locating information in the Portal interface, and loss of focus during the process of searching due to the confusing interface. These may cause poor performance or lack of satisfaction of the user of Portal. The subcategories in Category 2 are discussed below:
4. *Users have difficulties in conducting the search and locating of the article*: This subcategory had 278 comments (8%). In these comments the respondents reported their difficulties in using the search tool; some respondents complain that it is only possible to search by subject. Others say that to search one has to go through many unfamiliar steps. Some emphasize the lack of homogeneity in the interfaces of the Portal, as it redirects the user to the interface of provider of the database. In this process, many users feel lost because they do not understand that they left the Portal. Another important point mentioned by respondents refers to the time taken to locate an item: many find the process slow and time consuming, requiring many stages to find a document. Most respondents claim that when undertaking a search in the Portal often the focus of research is diverted mainly because there are alternative ways to do the same action. That is confusing causing them to feel lost. Another related problem is that many respondents fail to return to the initial page of the query, and for that reason they are forced to repeat all the steps previously performed.
5. Users complain about non availability of journals or of full text of articles: This subcategory is home to the largest number of comments (1027), representing 29% of the comments. Users point out that sometimes the journal they need is subscribed to but older issues are not available. The Portal subscribes only to the latest few years of the journal collections. Thus, if the specific article they are looking for is not recent, most probably the full text will not be available even though the journal is in the Portal. Users also want more journals in addition to the ones that the Portal already has.
6. *Users complain about the system interface*: This subcategory contains 5.0% (176) of the comments which were about the interface of the Portal. The interface is the channel that allows users to interact with the features of an information system, and the search interface may be used to increase the

efficiency of searching. When the interface is "friendly" it will help users to better interact with the system, but if it is "unfriendly" it may prevent users from using the system the way it is expected (Mansourian, 2008). In the view of some respondents that fact is materialized and many reckon that the design and layout of the Portal interface is cluttered with too many unnecessary details that are poorly distributed across the site making it difficult to navigate.

Category 3 - Institutional Aspects

The comments made by the respondents showed as barriers to searching the Portal the low connection speed, problems to access the Portal, unavailability of computers, of printers and of rooms to access the Portal, lack of policies on training on the use of the Portal and on widely informing the community of users about the existence and benefits of the Portal, among others. The subcategories of Category 3 are discussed below:

7. *Users report problems to access the system*: This was the subcategory with the second highest response rate. 913 (25%) of the comments said respondents did not carry out research at the Portal by lack of access to it, or for failing to have unrestricted access to its services and content. It should be explained here that access to the Portal can be local, from any computer in the member institution with an authenticated IP address, or remote, when the user logs into the system through passwords from any computer with internet access (CAPES, 2014). Regarding remote access, many users reported that they believe that having to use a password restricts the use. For many others the difficulty lies in the fact that for remote access one is required to log in at the home institution of the researcher first and then access the Portal, which adds one more step to the process. The reaction of the respondents about the access to the Portal, either from the institution or remotely is generally negative, and many consider access as difficult, limited, complicated, and slow and requiring many actions before one can start the search.

8. *Users report problems on the infrastructure provided by the institutions*: This subcategory represents 15% of the comments. One of the problems cited refers to non-availability of sufficient number or of up to date computers in the institutions. Other problems are related to network slowdowns and system downtime, causing difficulty to access the Portal and to the long time taken for downloads. Some point out, for example, that every time one access the Portal the website is slow, and it takes excessive time to open files. Other comments mentioned servers that cannot adequately manage the information flow and causes connection failures. In addition, respondents equate the problems of accessibility to the Portal to bad quality of services offered in the institutions.

9. *Users request wider advertisement and information on the Portal and training on its use*: This subcategory has 278 comments representing 8% of the responses analyzed. Users complain about the lack of training on the use of the Portal, and also about the absence of broader dissemination of information about the existence of the Portal, its importance and benefits to its community. Other comments mention the need of help information in the Portal about the search resources and process. Many respondents also said if they learnt to use the

resources available the chances of locating the requested information would increase. As one user puts it, there is a "Lack of information on how to harness the full potential of Capes Portal and how to do it efficiently". There are many comments that points out the need for training to increase the use of the Portal and to make such use more efficient. Some examples are: "I lack familiarity with the tools available. There should be training," "believe there should be training for its constant use". Regarding the constant marketing of the resources of the Portal to its community, respondents contend that the Portal will always have to be present to avoid falling into oblivion, not to be ruled out as a search option for obtaining scientific articles. This claim can be seen in the following comment: - "To avoid oblivion, the Portal must insistently remind us of his presence."

6. Conclusions and Recommendations

The analysis revealed that Category 3, Institutional Aspects, concentrated most of the comments (48%), while Category 2, Aspects of the System obtained 42% of the comments, and Category 1, Personal Aspects had the lowest number of observations, with 10% of the comments.

Personal factors (Category 1) responsible for the difficulties in using the Portal refer to the individual characteristics such as lack of time and skills on computer, the internet or foreign language. Results show that lack of time is the most relevant of these (100 comments – 8%) and lack of computer or language skills were minimally mentioned (1.6% of the comments).

Barriers and difficulties cited by the respondents that fall into Category 3 (Institutional Aspects) were the institutional infrastructure, specifically with regard to the speed of the connection, the availability and suitability of equipments such as computers, printers, and updated software. Another important subcategory within Category 3 was the need for more training on the use of the Portal and the need for more marketing about the Portal. Many users ignore the Portal as an option when they search for information, and openly declared that " Sometimes I forget this option in my research," Forgetting the Portal and searching other databases or websites reflects the absence of a marketing strategy and training to integrate the Capes Portal in the routine of Brazilian researchers. Another way to transform the act of searching the Portal into a habit, in the view of some respondents, has to do with instructions and information about the functionalities of the Portal. By learning to use the Portal automatically barriers and difficulties may decrease, and thus the use of the Portal may increase. This claim can be confirmed by the comment of this respondent: "... I think it's a matter of habit".

The barriers mentioned by users as Aspects of the System (Category 2) are related to the availability of information, usability and other interface issues. According to Mansourian (2008) the majority of users are aware of the importance of the coverage of a database in the result of a search. Accordingly, the current study found the major complain of the respondents was that the information they searched for was not available in the Portal either because the journal was not subscribed to or because the full text of the article was not there.

The analysis of the comments also revealed that some respondents consider the interface of the Portal "unfriendly", difficult and confusing. Rosenfield & Morville (1998) confirm that users "hate" when they cannot find on the website the information that they are aware that is available there. And above all, cannot stand the confusing layout, inadequate language and slowness.

The Portal could be more utilized if factors in Categories 3 (Institutional Aspects) and 2 (Aspects of the System), where most of the comments fall, were addressed. As Table 2 shows, the comments suggest that improvements in the interface, investments in training, information and in the collection, and improvements in the infrastructre would respond to 90% of the complaints of the users. 41% of the complaints could be solved with training and information. Almost 30% of the comments require an investment in the collection. Investments in infrastructure would address 15% of the comments, while complaints about the interface comprised only 5% of the users observations.

TABLE 2. Areas for improvement in the Portal

N.	Category	Subcategories		
			Freq.	**%**
1	**Improving the Interface**	6.Users complain about the system interface	176	5%
		Sub-Total	**176**	**5%**
2	**Training and Informing**	4. Users have difficulties in conducting the search and locating of the article	278	8%
		7. Users report problems to access the system.	913	25%
		9. Users request wider advertisement and information on the Portal and training on its use	278	8%
		Sub-Total	**1469**	**41%**
3	**Improving the collection**	5. Users complain about non availability of journals or of full text of articles searched	1027	29%
		Sub-Total	**1029**	**29%**
4	**Improving the infrastructure**	8. Users report problems on the infrastructure provided by the institutions	551	15%
		Sub-Total	**551**	**15%**
		Total	**3225**	**90%**

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References

BRUM, M.; BARBOSA, R. B. (2009). Comportamento de Busca e Uso da Informação:

Um Estudo com Alunos Participantes de Empresas Juniores. *Perspectivas em Ciência da Informação,* Belo Horizonte, v.14, n. 2, pp. 52-75.

CASARIN, H. C. S.; OLIVEIRA, E. S. (2012). O USO DA INFORMAÇÃO NO ÂMBITO ACADÊMICO: O COMPORTAMENTO INFORMACIONAL DOS GRADUANDOS DA ÁREA DE EDUCAÇÃO. *Encontros Bibli*, v. 17, n. 1, pp.169-187.

COSTA, R.O. da. (2007). *Análise do Uso de Periódicos Científicos na Transição do Meio Impresso ao Eletrônico em Dissertações e Teses*: O Impacto do Portal de Periódicos/CAPES na Produção do Conhecimento. 2007. 142 f. Dissertação (Mestrado em Ciência da Informação) - Campinas. Programa de Pós-Graduação em

Ciência da Informação. Pontifícia Universidade Católica de Campinas, Campinas.

CRESPO, I. M.; CAREGNATO, S. E. (2006). Padrões de comportamento de busca e

uso de informação por pesquisadores de biologia molecular e biotecnologia. *Ci. Inf*., Brasília, v. 35, n. 3, pp. 30-38.

DU, T. J., EVANS, N. (2011). Academic Users' Information Searching on Research Topics: Characteristics of Research Tasks and Search Strategies. *The Journal of Academic Librarianship,* v. 37, n. 4, pp. 299–306.

FARIAS, M. G. G. et al. (2013). CONSTRUÇÃO E ACIONAMENTO DE UM MODELO DE MEDIAÇÃO DA INFORMAÇÃO. *Inf. & Soc.:Est*., v.23, n.3, pp. 175-188.

GARCIA, R. M. (2007). *Modelos de comportamento de busca de informação:*

contribuições para a Organização da Informação. Marília, 2007.139 f. Dissertação (Mestrado em Ciência da Informação) UNESP, Marília.

GIL, Antonio Carlos. (1999). *Métodos e técnicas de pesquisa social.* 5.ed. São Paulo: Atlas.

KRIKELAS, J. (1983). Information seeking behaviour: patterns of academic researchers. *Drexel Library Quarterly*, Philadelphia, v. 19, pp. 5-20.

MANSOURIAN, Y. (2008). Web search efficacy: definition and implementation. *Aslib*

Proceedings: New Information Perspectives, v. 60, n. 4, pp.349-363.

MARTINS, M. de F. M. (2006). *Estudo do uso do Portal da Capes no processo de geração de conhecimento por pesquisadores da área biomédica*: Aplicando a técnica do incidente crítico. Rio de Janeiro, 2006. 126 f. Dissertação (Mestrado em

Ciência da Informação) – Universidade Federal Fluminense / IBICT, Rio de Janeiro,.

ROSENFELD, L; MORVILLE, P. (1998). *Information architecture for the World Wide Web.* Sebastopol, CA: O'Reilly, 202p.

SILVA, A. C. P. da. et al. (2007). Déficit Informacional: obstáculos no uso de canais (in)formacionais por docente do programa de pós-graduação em economia – Ppge/Ufpb. *Inf. & Soc*., v.17, n.3, pp.107-117.

SPINK, A.; COLE, C. (2006). Human information behavior: Integrating diverse approaches and information use. *Journal of the American Society for Information Science and Technology*, v. 57, n.1, pp.25-35.

SWIGÓN, M.(2011). Information barriers in libraries: types, typologies and Polish empirical studies. *Library Management*, v. 32, n. 6/7, pp. 475-484.

WILSON, T. D. (1999). Models in information behaviour research. *The Journal of documentation*, v. 55, n. 3, pp. 249-270.

WILSON, T. D. (2000). Human information behavior. *Informing Science*, v. 3, n. 2, pp. 49-55.