

O USO DE REVISTAS ELETRÓNICAS POR PROFESSORES / INVESTIGADORES DE UMA FACULDADE DE ENGENHARIA

THE USE OF ELECTRONIC JOURNALS BY TEACHERS / RESEARCHERS OF AN
ENGINEERING COLLEGE

Diana Machado | Fernanda da Silva Martins

Resumo: Nesta era da informação em que o campo da tecnologia da informação e comunicação prevalece, as revistas científicas em formato eletrónico são um canal de informação cada vez mais utilizado pelos investigadores, uma vez que permite a comparação dos resultados a nível internacional o que possibilita um melhor desenvolvimento da Ciência. Este trabalho focou-se principalmente no uso de periódicos eletrónicos por professores / investigadores dos departamentos de Engenharia Química e Engenharia Informática da Faculdade de Engenharia do Porto, Portugal. Neste estudo, foi utilizado um inquérito por questionário para caracterizar os níveis de acesso a revistas eletrónicas por esta comunidade. Os resultados mostram que existem diferentes formas de pesquisar e utilizar a informação científica, nestes departamentos, nomeadamente em termos de frequência de acesso, número de artigos consultados, uso de bases de dados e preferências relativas à modalidade de publicação.

Palavras-chave: Comportamento informacional; Comunicação científica; Revistas científicas em formato eletrónico

Abstract: In this information era, where the field of information technology and communication prevail, scientific journals in electronic format are an information channel increasingly used by researchers, since they allow the comparison of results at an international level which makes possible to best develop Science. This research was mainly focused on the study of the use of electronic journals by teachers/researchers from Chemical and Informatics Departments of the Faculty of Engineering of Porto, Portugal. In this study a survey was used in order to characterize the levels of access of electronic journals by this community. Results show that there are different ways of seeking and using scientific information namely in terms of frequency of access, number of articles consulted, use of databases and preference of publishing mode.

Keywords: Information behaviour; Scientific communication; Scientific journals in electronic format

1. Introduction

In today's society, with the development of information and communication technologies and endless scientific production published by various means, information behaviour and scientific communication are two subjects widely studied.

The present work aims to examine to what extent electronic journals are used by the community of teachers/researchers from two departments of the Faculty of Engineering at the University of Porto (Portugal) – Chemistry and Informatics. Choosing these departments was due to the fact that teachers/researchers recognize different features of use of journals in these two areas. This study is part of an international project hosted at the University of Leon in Spain.

2. Information Behaviour

The study of information behaviour is essential for the understanding of the whole process that involves a set of actions which arise from the production process till the use of scientific information.

According to Wilson (2000) it comprehends "the totality of human behaviour in relation to sources and information channels, including active and passive search of information as its use". Even before the existence of the term "Information Science" this already deserved attention by the scientific community (WILSON, 1999).

What one observe, however is that studies of information behaviour suffered some changes especially at the methodological level.

Since the 80s of the XX century, research on this area have ceased to give importance to systems and began to value the perspective of the user seen as having an active role in the process of information transfer (WILSON, 2000).

The study of information behaviour is based on the concept of information needs which "describes a subjective experience that occurs only in the mind of each individual, not being accessible to the observer" (WILSON, 2000). This can be seen particularly in the case of libraries where the identification of information needs is of extreme importance in order to organise collections and services to satisfy them.

Information behaviour is an issue that has been discussed mainly in the area of Information Science and it is a complex object of study, difficult to get just from a definition or standard model. That is why one can find in literature several theoretical models that seek to characterize it (for a review see Silva, 2010).

Informational behaviour - Habits and Needs of Engineers

The characteristics of information behaviour are something that changes according to the professional class of individuals. In this matter engineers have specific needs that distinguish them from other professionals as they are embedded in environments with very diverse needs and are mainly focus on solving technical problems.

When compared to scientists, engineers have different habits and practices as well as needs and preferences. Unlike scientists, engineers are concerned with production, design, products, processes and systems.

Engineers use libraries less than scientists and employ only information systems guided by them. They read mostly small books and technical reports. Regarding their information behaviour the easy access is the most important factor followed by the technical quality of information sources (PINELLI, 1991). In the same sense their perception is strongly influenced by their own experience.

Information behaviour of engineers can be seen either in a professional or in an academic context. In a professional context, behaviour of this community is based on its knowledge and the knowledge of other colleagues. When inserted in an academic context they have a greater conscience of the available sources of information namely other services such as libraries (ENGEL; ROBBINS; KULP, 2010).

In fact this professional class differs from other at the level of information behaviour regarding to resources used and the way they use them.

Scientific Communication and journals in electronic format

Scientific communication is a process that has been suffering changes over time and can be defined as "the set of activities associated to production, dissemination and use of information from a scientist who conceives the idea to search up that information until the results can be accepted as a constituent of scientific knowledge" (GARVEY, 1979). This process plays a key role in the dissemination of new knowledge at the scientific community and is essential for the development of science.

The scientific production of researchers was accomplished through various means but Information and Communications Technology (ICT) has revolutionized it by creating new communication platforms.

The beginning of the 80s of last century was characterized by the crisis of journals due to the rising price of subscriptions. Libraries were not able to withstand this price increase and they found in new information technologies the possible solution for scientific communication.

Thus, in the first half of the 90s of the twentieth century, to use ICT for electronic publications became accepted and generalized, while maintaining the existence of publications in paper.

Journals in electronic format emerged despite difficulties due to the resistance of sceptics over this new format. Thus, ICT reconfigured scientific communication processes by fostering interest in electronic publishing since it allows diffusing and accessing articles in a rapid and continuous way.

Nowadays the worldwide movement of free access to scientific information based on the Open Archives model has also driven major changes in the scientific communication process (LEITE, 2006).

The marked growth of scientific literature with the increasing commercialization of information made libraries and universities lost control and lead to the increase in the value of the acquisition of journals. In return it conducted to the movement of free access, i. e., the "free availability on the internet and literature of economic or scientific character, permitting any user to read, download, copy, distribute, print, search, or refer to the full text of the documents" (RODRIGUES, 2004).

Scientific communication has evolved until the present days becoming accessible to a larger number of people without costs, namely by the emergence of the Open Access movement which is in constant expansion. In a near future this tendency will become more pronounced and perhaps free access to information will be a reality for most scientific publications.

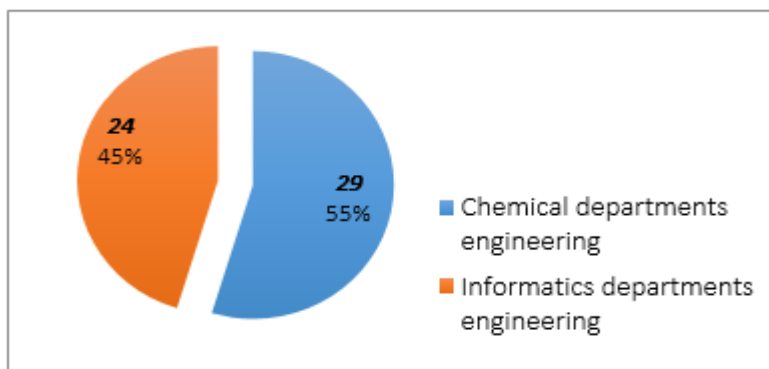
3. Methodology

The aim of this study was to analyse and eventually distinguish the level of use and access of electronic journals by the community of teachers/researchers from two departments of FEUP (Chemical and Informatics engineering).

Participants

A total of 53 individuals from the selected departments of FEUP (Departments of Chemical and Informatics Engineering respectively DCE and DIE) representing 40.45% of the total 131 teachers/researchers (Figure 1).

Figure 1 – Sample distribution by Departments



Materials

A survey composed of 28 questions with response options and 3 opened questions was created specifically for this study similar to the one applied at the University of Leon in Spain and the University of Coimbra in Portugal both engaged in a more comprehensive study. Some adaptations were made particularly on “demographic data” section. Then it has been tested by a small sample of individuals and some adjustments were made before being applied.

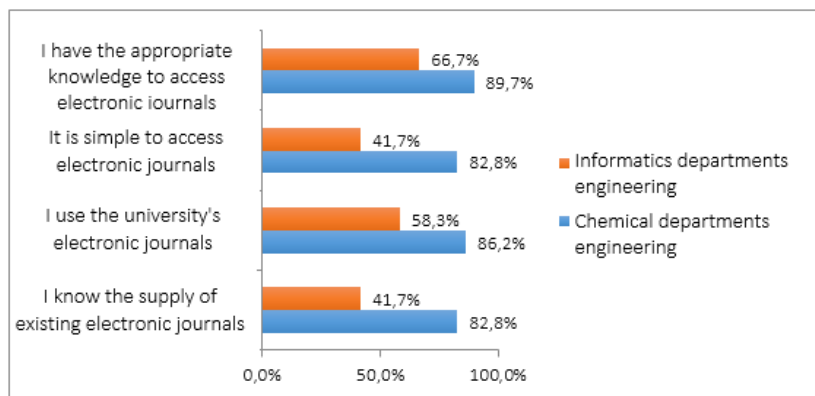
The questionnaire has been placed on an online platform (*questionpro.com*).

4. Results

A comparative study between the two FEUP departments has been made. Results identified some differences related to the knowledge and use of the existing electronic journals resources by lecturers. Concerning the “Habits and accesses” to electronic journals, the majority of the surveyed community know and uses this resource with DCE presenting a percentage of 96 of teachers/researchers answered affirmatively and DIE 91.7.

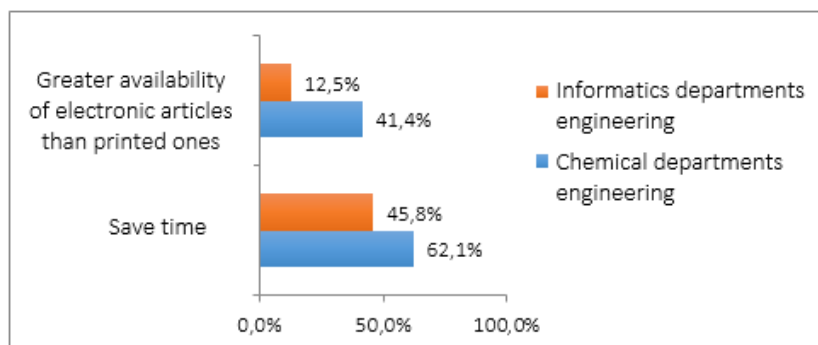
Regarding the access and use of electronic journals provided by the University, all the answers show that inquiries from DIE are the ones who feel more comfortable accessing those resources. There are percentage differences on the options “It is simple to access electronic journals” and “I know the supply of existing electronic journals”. Thus, there is a significant association between department and the level of access and use of electronic journals available at the university ($\chi^2(1) = 4,220, p = 0,040$) (Figure 2).

Figure 2 – Access and use of electronic journals



Differences between the reasons why teachers/researchers choose to use electronic journals show that “Greater availability of electronic articles than printed ones” and “to save time” were chosen in a larger percentage by the DCE teachers/researchers. Only for the first option there was a significant association between department and that reason ($\chi^2(1) = 5,397, p = 0,020$) (Figure 3).

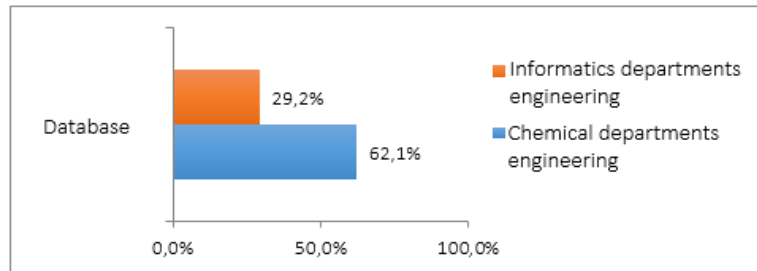
Figure 3 – Reasons for the use of electronic journals



Concerning the access of electronic contents there is a difference in the level of the use of databases. They are most used by teachers/researchers from DCE (66.2%). In DIE only 29% of the respondents use this way of accessing to contents. Thus, there is a significant

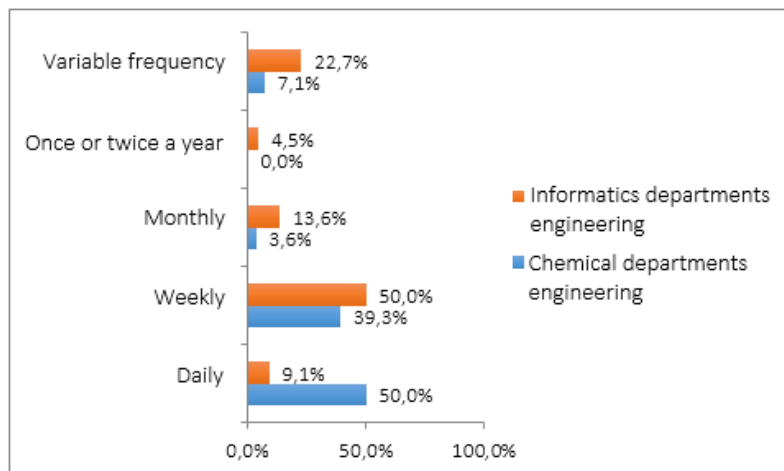
association between department and the electronic access of contents through data bases ($\chi^2(1) = 5,705, p=0,017$) as presented in Figure 4.

Figure 4 – Ways of accessing electronic contents



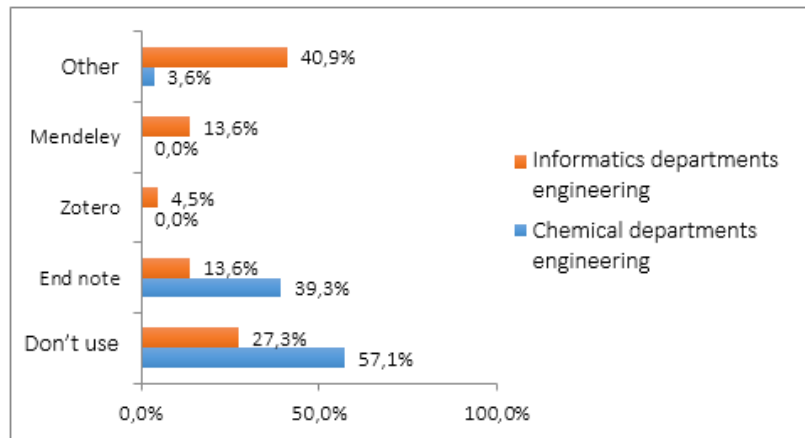
Analysing the frequency of access to electronic journals there is a significant difference between the two departments. Teachers/researchers from DCE use with greater regularity electronic journals, with about 50% of the respondents doing it daily. Also in this case it was observed a significant association between department and the frequency of access to electronic journals ($\chi^2(4)=11,735, p=0,019$) (Figure 5).

Figure 5 – Frequency of access to electronic journals



For the use of the managers of bibliographical references some differences between the departments were also found. Data indicate that there is a significant association between department and the use of the references management software ($\chi^2(4)=19,072, p=0,001$) as presented in Figure 6.

Figure 6 – Reference management software



5. Discussion

In this study the majority of the inquiries of both departments revealed to have accurate knowledge of how to access and use electronic journals. However the teachers/researchers from the DCE have a superior level of use. They seem to be more comfortable using these tools perhaps due to the fact that there is a greater diversity of journals in electronic formats on the scientific domains of the DCE.

The frequency of access and use of electronic journals showed a pronounced difference between the two departments. Teachers/research from DCE use them daily whereas those from DIE only weekly. In this department they refer that they also keep informed by communicating with colleagues. This is pointed out for some authors concerning the information behaviour of the engineers Shuchman (1981). Frequently engineers prefer to appeal to their colleagues instead of searching in literature.

The availability of content was referred as being very important for teachers of both departments and of having also a great impact on the promotion of their scientific production. This seems to be related, in a certain way, with the principles advocated by the emergent movement of free access proposing the free access to a growing number of electronic contents to the academic population.

6. Conclusions

This study analysis the aspects related to information needs of a sample of teachers/researchers from two departments of different areas of knowledge of a Faculty of engineering in Portugal. Journals are very important in the scientific process of communication which has suffered many developments over time. Thus, knowing how electronic journals affect the ways of accessing knowledge by these persons is fundamental as it is the current means of disclosing knowledge in all areas.

Some differences between the two departments (Chemical and Informatics Engineering) were found showing, in general, a greater comfort either in accessing or using electronic journals of teachers/researchers from the department of Chemical Engineering. It is also in this department that there are a greater number of publications in electronic journals. These aspects reflect not only that this is the preferential channel of information for disclosing their productions but also that there is a strong commitment in the area of research of that department.

In the end one can say that electronic journals, despite the evidenced differences between departments, meet the informational needs of their users.

Referências bibliográficas

ENGEL, D.; ROBBINS, S.; KULP, C.

2011 The Information-seeking habits of Engineering Faculty. *College & Research Libraries*. 72 (2011) 548-567.

GARVEY, W. D.

1979 *Communication, the essence of science: facilitating information exchange among librarians, scientists, engineers, and students*. New York: Pergamon Press, 1979.

LEITE, F. C. L.

2006 *Gestão do conhecimento científico no contexto acadêmico: proposta de um modelo conceitual*. Brasília: Universidade de Brasília, Departamento de Ciência da Informação, Faculdade de Economia, Administração, Contabilidade e Ciência da Informação, 2006.

PINELLI, T. E.

1991 Information-seeking habits and practices of engineers. In STEINKE, Cynthia A., ed. - *Information seeking and communicating behavior of scientists and engineers*. New York: The Haworth Press, 1991.

RODRIGUES, E.

2004 Acesso livre ao conhecimento: a mudança do sistema de comunicação da Ciência e os profissionais de informação. *Cadernos BAD*. 1 (2004) 24-35.

SILVA, A. M.

2010 Modelos e modelizações em Ciência da Informação: o modelo eLit.pt e a investigação em literacia informacional. *Prisma.Com*. 13 (2010) 1-56.

SHUCHMAN, H. L.

1981 *Information transfer in Engineering*. Glastonbury: The Futures Group, 1981.

WILSON, T. D.

1999 Models in information behaviour research. *Journal of Documentation*. 55:3 (1999) 249-270.

WILSON, T. D.

2000 Human information behavior. *Informing Science*. 3:2 (2000) 49-56.

Diana Machado | dianacmachado@gmail.com

Mestre em Ciência da Informação pela Universidade do Porto

Fernanda da Silva Martins | mmartins@letras.up.pt

Faculdade de Letras da Universidade do Porto / CETAC.MEDIA