

Access to Scientific Knowledge: the Argentinean Scenario

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Abstract

A brief analysis is made of the increasingly difficult conditions prevailing in Argentina as regards the access by scientists to information and data. The critical situation of the economy has resulted in a strong decrease of the number of publications currently being procured by institutional libraries. Some efforts to alleviate the situation, particularly by resorting to electronic sources, are described.

Introduction

The Argentine Republic is a country with a long and distinguished academic and scientific tradition. At the end of 2001, the human resources devoted to R&D had the following composition: a total of 20.894 full time equivalent (FTE) researchers, 84% (17.489) of which were employed by the public sector (Research Institutes and Universities), 4762 full time trainees (85% in the public sector), 6211 full time technicians (72 % in the public sector) and 5.557 full time equivalent support personnel (79% in the public sector).

Argentina expends 0.4 % of its gross national product GNP in R&D, 72% coming from the central State funds, 23 % from the private sector and the balance from the provinces, private universities and NGOs. The expenditure is rather small and has never gone beyond 0.45% of the GNP, being smaller than that of similarly developed neighboring countries such as Brazil (0.87%) and Chile (0.54%).

The Science and Technology sector is presently facing a critical situation in the country as a result of several consecutive years of severe lack of financial support, the aging of the scientific population (average age: 50 years) resulting from the lack of resources to appoint new personnel in the public sector and, consequently, on a sustained exodus of highly trained young graduates (brain drain). Plus other factors that have submerged the country in a general crisis, which peaked in 2001. Nevertheless, even within this highly unfavourable scenario, the productivity of Argentine scientists can be considered satisfactory, and the quality of their work has obtained international recognition over the years.

Argentina has 36 state universities, 53 private universities and a number of R&D institutions such as CNEA (National Atomic Energy Commission), CONICET (National Science and Technology Council), INTI (National Institute of Industrial Technology) and INTA (National Institute for Agricultural Technology), amongst others.

Connectivity and access

Internet connectivity is accomplished by RETINA or by commercial suppliers. RETINA was a project promoted by Science Civil Association and, with the support of the Antorchas Foundation, has become an academic network characterized by its continuity and by the high standards of quality of its services. Twenty five institutions are included in the network as well as the Universities Interconexión Net (RIU). RETINA is a member of Internet2 Consortium and has signed a Memorandum of Understanding with AmPath, a project promoted by the Florida International University. RETINA is also a part of CLARA (Latin American Cooperation of Advanced Nets), a joint effort to interconnect the academic nets of Central and South America with the European advanced nets, involving most of the countries of the region.

Despite considerable efforts and initiatives to correct the situation, the Argentine scientists are faced everyday with difficulties to access even the most elementary services, such as e-mail, due to equipment obsolescence, to lack of access to wider bandwidths, etc, due to the meagre budgets of the institutions. A situation worsened by the lack of informatic expertise arising from the impossibility to appoint personnel and/or the low salaries that prevail. In general, it can be said that a clearly perceptible international digital divide, as well as a technological divide, exists for our scientists, hindering their opportunities to access information, communication technologies and to the use of Internet in their daily activities. As is to be expected, a domestic digital divide [3] exists, caused by an uneven distribution of connectivity between different areas of such a vast country.

Access to publications and to international scientific data bases.

A progressive decay in the procurement of high quality international journals has been occurring in the libraries of the Argentine science and technology sector. The decrease in the number of purchased publications reached a critical level in 2002 when, due to a sharp currency devaluation, the renewal of subscriptions became practically impossible.

The problem is aggravated by the growth in relevance of new disciplines (informatics, robotics, biotechnology, space sciences, etc), the increasing number of published journals related to any given discipline and, none the least, the substantial increase in the price of most leading journals.

According to a recent survey regarding the purchase of serials and databases [4], as an example, only 16 out of 23 private university libraries were able to renew subscriptions. And only 753 out of a total of 1.685 subscriptions to journals available in 2001 were renewed. From this group only two universities were able to renew subscriptions to of more than 200 titles.

The updating of conference proceedings, monographs, etc. in universities and research institutions is practically non-existent. A restricted actualization of their collections was possible for some academic libraries in the 90s due to some financing by FOMECA (Fund for the Improvement of University Quality) using a loan of the World Bank for the Higher Education Improvement Program.

Within this scenario, convinced of the need for improvement of the access of our

scientists to relevant information and of the difficulties faced for our institutions for their procurement, the Secretary for Science, Technology and Productive Innovation (SECTIP) decided, in 2002, to assign resources from a Interamerican Development Bank (IDB) loan to the centralized acquisition of international scientific journals. The institutions involved in the project are the 36 National Universities and 4 official R&D institutions: CNEA, CONICET, INTI and INTA.

At the beginning, SECTIP interacted with the Brazilian "Coordenação de Aperfeiçoamento de Pessoal de Nível Superior" (CAPES), responsible for the Site "Periódicos" [5]. An Advisory ad-hoc Technical Group was then formed and the "Electronic Library for Science and Technology: The Argentine Site of Scientific Knowledge" [6] was opened on the 19 December 2002. It presently offers access to the following editors of electronic publications: Science Direct, IEEE/IEE Electronic Library (IEL), AIP/APS, ACS and to the following databases: FSTA, PsycINFO, MathSci, Biosis and CSA of Ovid/SilverPlatter and to Wilson Web (including full text).

This initiative was borne to counteract a critical situation that might have widened the gap between the Argentine scientist and the information required for their daily work.

It is worth mentioning that, during 2002 and 2003, while the World Bank still considers Argentina in the Upper middle income bracket, some editors recognized the real economical situation of the country and offered free access to their publications in electronic format, such as AIP/APS; Argentine scientists can use the eJDS service and PNAS included our country for free access in February 2003.

Visibility of the intellectual production of Argentine scientists.

Argentine scientists, particularly those of the hard sciences, prefer to submit their work for publication in peer reviewed international journals. A number of local journals exist, not always reaching the internationally accepted standards of editorial quality. In this respect, the CAICYT (Argentine Center for Scientific and Technological Information) is making efforts to alter this situation by means of courses, seminars, workshops, etc. for scientific editors as well as librarians, in the later case aiming at an optimization in the quality of metadata registration. This National Center is associated to Latindex [7], the Regional System for On-Line Information for Scientific Journals in Latin America, the Caribbean, Spain and Portugal, a network of institutions aiming at a coordinated and cooperative gathering and dissemination of information about regional serial scientific publications.

Efforts are being made, since 1998, towards the implementation of the Argentine SciELO [8], a model developed by BIREME [9] for electronic publication in developing countries. However, the initiative has been delayed by the lack of continuity of the related authorities, difficulties in the procurement of the required hardware and the lack of properly trained personnel.

When considering the problems encountered by the Argentine scientific community in the access to scientific information and knowledge, as well as the visibility of its scientific

production, the general situation of local S&T must be borne in mind. An improvement in the present conditions and a reduction in the domestic and international digital divide will not be possible unless scientific knowledge generation and technological innovation become a State Policy.

A great step forward has been the above mentioned Electronic Library created by SECTIP. However a strong perception of its importance by the relevant authorities will be required in order to assure its sustainability in the future.

Future challenges

Some subjects merit future consideration; for example: the development, together with the editors, of fair criteria for price fixation, according with the possibilities of each country and independently of the misleading economical indicators currently in use. It would be also convenient to enable the inclusion of more institutions to the "Electronic Library" in order to narrow the domestic digital divide.

A cultural change must be promoted in the academic community, as regards the models of scientific publication, fostering:

the electronic publishing

the adhesion to the Open Access mode

the creation of institutional archives, interoperables with the Open Archives Protocol (OAI)

the training of librarians as agents of change

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