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Bendjama Billel^{1*}

University August 20, 1955- Skikda- (Algeria)

Email : b.bendjamaa@univ-skikda.dz

Belhouchet Zoubir²

Univercity of Costantine Emir Abdelkader – (Algeria)

Email : z.belhouchet@univ-emir.dz

Abstract

The advantages of using information and communications technology to enhance and support scientific research have become clear and confirmed in the current era, It works to motivate research professors and doctoral students, and information and communications technology, especially the Internet, e-mail, and various digital applications, are important means of facilitating and accelerating scientific exchange between researchers, and an essential foundation for developing research processes in universities

Through this study, we seek to know the behaviors of professors and researchers at the Faculty of Architecture and Urbanism at the University of Constantine 3, in dealing with modern digital technologies, and to identify ways of using and benefiting from information and communication technology in their research activities, and based on a questionnaire we concluded that technology contributes to the development of applied research. And educational, and participate in the dissemination of scientific culture, technology and innovation in cooperation with the social and economic sectors, It also contributes to strengthening cooperation between university research, industrial research and all productive sectors.

Keywords: ICT- Scientific research, Research professors, Constantine, Algeria.

ملخص

إن مزايا استخدام تكنولوجيا المعلومات والاتصالات لتعزيز وتدعيم البحث العلمي أصبحت واضحة ومؤكدة في العصر الحالي، حيث تعمل على تحفيز الأساتذة الباحثين وطلبة الدكتوراه، وتعد تكنولوجيا المعلومات والاتصالات لا سيما الإنترنت والبريد الإلكتروني ومختلف التطبيقات الرقمية وسائل هامة لتسهيل وتسريع التبادل العلمي بين الباحثين، وركيزة أساسية لتطوير عمليات البحث في الجامعات.

من خلال هذه الدراسة نسعى إلى معرفة سلوكيات الأساتذة والباحثين في كلية الهندسة المعمارية والتعمير بجامعة قسنطينة 3، في التعامل مع التقنيات الرقمية الحديثة، وتحديد طرق الاستخدام والاستفادة من تكنولوجيا المعلومات والاتصالات في أنشطتهم البحثية، وبالاعتماد على استمارة استبيان توصلنا إلى أن التكنولوجيا تساهم في تطوير البحوث التطبيقية والتعليمية، والمشاركة في نشر الثقافة العلمية والتكنولوجيا والابتكار بالتعاون مع القطاعات الاجتماعية والاقتصادية، كما تساهم في تعزيز التعاون بين البحث الجامعي والبحث الصناعي وكافة القطاعات الإنتاجية.

الكلمات المفتاحية: تكنولوجيا المعلومات والاتصالات، البحث العلمي، الأساتذة الباحثين، قسنطينة، الجزائر.

* Corresponding author:

1. Introduction

Over the past 20 years, the field of scientific research has undergone major transformations induced by internal and external causes, often closely intertwined, and shared between trends towards standardization (regarding international organizational standards) and local requirements (adapting to the local context and responding to development needs). This resurgence of the theme of research responds to concerns that can be found in the discourse of scientists and entrepreneurs as well as in that of politicians. Before this period, concerns were centered more on the issues of education and the adequacy of training and employment to supervise and control the production capacities of imported "turnkey" or "product in production" factories. hand".

Among the problems in scientific research and the globalized STI that Algeria is currently suffering from, we can cite the thorniest ones, and in this case the following:

- Almost total dependence on the production of IST in world standards.
- Underuse of IST electronic resources.
- Misuse of Information and Communication Technologies (ICT);
- Insufficient budgets allocated to scientific research.
- Dissatisfaction with the needs for premises and specific and necessary equipment.
- Circulation of scientific production in a limited and localized circuit.
- Scientific events not oriented towards research and development.

These are the problems that have attracted our attention the most and that have aroused in us a deep reflection as to their causes and the solutions that we can project. This research work is presented in three (03) chapters. The first represents a theoretical and conceptual framework. It tries through a few methodological benchmarks to delimit the objectives of the study, to trace the choice of the theme and to develop definitions relating to certain concepts. The second deals with the very object of this research work, namely the use of ICT in scientific research within the framework of the globalization of STI exchanges. The third chapter, meanwhile, deals with the use of ICT by teacher-researchers of the faculty of architecture and urban planning at Constantine University3.

2. Chapter One: A Theoretical and Conceptual side

2.1. Choice of Theme

Since the second half of the 20th century, there has been a spectacular increase in the production of scientific and technical information (STI) throughout the world; the term “documentary explosion” better describes the phenomenon. The latter constitutes a basis for scientific research by a cumulative effect, which makes the innovations, discoveries and all-out exploits that we live in. The same phenomenon is propagated even more, at the beginning of the 21st century, by an unprecedented process: it is the globalization of ICT; which subsequently generated a global knowledge economy. (Yousfi, H. & Matmar, 2016). But what about the situation of the phenomenon and the propagating and globalizing process in Algeria? The answer to this question is one of the causes that led me to choose this theme. Other causes exist and can be summarized in the following points:

1. The unsatisfactory attendance of our university libraries university libraries by teacher-researchers;
2. The absence of a coherent national policy regarding the management of STIs at both levels: national and global;
3. Insufficient human, financial and documentary resources (paper documents, databases and databases, etc.) at the level of the university libraries;
4. The impact of the globalized STI on scientific research at Constantine 3 University and particularly at the Faculty of Architecture and Urban Planning is a fact, but how to assimilate it and - then - use it wisely? Through the teacher-researchers themselves?

By the existence of better-endowed and better-managed university libraries? Or by building a national STI policy? There are so many causes that have made our choice to be focused on the theme of the impact of globalized STI on scientific research at Constantine 3 University and more specifically at the Faculty of Architecture and Urbanism.

2.2. Objectives of the Study

The main objective of this paper is to prove that research practices at the faculty of architecture and urban planning are not globalized and do not aim to develop all the skills expected of teacher-researchers. In other words:

- a) - Prove the dependence that binds the acquisition of the skills of teacher-researchers at the faculty level to scientific and technical information IST;

- b) - Prove the close relationship between the weakness of the scientific production (which does not meet the standard of expected skills) of the teacher-researchers of the faculty and the non-use (or the restricted use) of the documentary collection specialized in the four corners of the world;
- c) - Prove that evaluation is a non-condition for the acquisition of skills for the development of a substantial research project.

Other induced (secondary) effects can be expected through this study. It's about:

- To generate a series of milestones defining methods for active participation leading to the acquisition of required skills;
- Contribute to the enrichment of the debate on the training of teacher-researchers in documentary techniques, STI and ICT. Finally, to contribute to the improvement of the quality of the product of the research which leads to the manufacturing process of this environment.

2.3. Concepts Used

The formulation of definitions relating to certain key concepts used in this research is a considerable contribution to the understanding of its content.

We have identified a conceptual and notional framework by:

- The definition of the concept of information and communication technologies;
- Determination of concepts related to information and communication technologies;
- The delimitation of the meaning of bipolarity: traditional sources of information / electronic sources of information.

2.3.1. The Concept of “Information and Communication Technologies”

The acronym ICT For “information and communication technology” refers to all the technologies used in the processing and transmission of information. This concept, the definition of which remains imprecise, concerns innovations resulting from computing, electronics, telecommunications, and audiovisual, in particular Internet and mobile telephony. It was born from the rapprochement between computing and telecommunications in the 1990s. ICT (information and communication technologies), which speed up and improve the flow of information, has considerably changed the global economic situation for more than 20 years.

The continuous development of these technologies has transformed market competition, the internal organization of companies and their cooperation.

Information and Communication Technologies ICTs, which include the resources necessary for the transmission and management of information (Shah, 2010), can be classified by sector as follows:

- IT equipment and hardware, servers; - Microelectronics and components;
- Telecommunications and computer networks;
- Multimedia; - Computer services and software;
- E-commerce (e-commerce) and electronic media. (NTIC, 2022)

2.3.2. Concepts Related to Information and Communication Technologies

2.3.2.1. New Information and Communication Technologies

To all the technologies used in the processing and transmission of information, mainly computing, the Internet and telecommunications.

The term tends to qualify more particularly the problems resulting from the integration of these technologies within institutional systems, covering in particular, the products, practices and processes potentially generated by this integration. (Nebar, 2018)

2.3.2.2. Information and Communication Technologies for Education

Information and communication technologies for education (ICTE) cover digital tools and products that can be used in the context of education and teaching (ICTE = ICT + Education).

ICTE groups together a set of tools designed and used to produce, process, store, exchange, classify, find and read digital documents for teaching and learning purposes. (Bendjama, 2020)

The study of teaching methods integrating ICTE is the subject of techno-pedagogy. (NTIC, 2022)

2.3.2.3. Globalization of Information

The great novelty of globalization at the beginning of the 21st century is the implementation of information and communication technologies (ICT), in open or closed sources, also on a global scale. With access to these tools, globalization affects individuals as much as States or companies, with a very variable perception depending on the individual. The first effect of this technological change is the financialization of the economy and the development of multinational and transnational companies. (Sebti & Sebti, 2018)

Contrary to purely financial factors, the globalization of information technologies such as the web, the Internet and other media directly affects

individuals. Exposure to foreign cultural products (Japanese cartoons, Indian cinema, South American dances, etc.) is no longer the privilege of the elite. It raises awareness of the diversity of cultures worldwide. (Daniela, H; Katarína, T. 2022)

2.3.2.4. Internet

It is a global network combining telecommunications resources and computer servers and customers, intended for the exchange of electronic messages, information multimedia and files. It works using a common protocol that allows routing step by step of messages cut into independent packages. Routing is based on the protocol IPs (Internet Protocol), specified by the Internet Society (ISOC). Access to the network is open to all users got an address from an accredited body. Management is decentralized in interconnected networks. (Mohammed Khire Eddine, 2002)

2.3.3. Traditional Information Sources/Electronic Information Sources

To find information, one must look for it in the possible places where it can reside, which constitute the sources of information.

The sources of information are generally impregnated by the types of information they contain (formal-informal, general-specialized, private-public, etc.). The Internet contains more and more information.

Several traditional sources of information are now present on the web.

The Web is today the first and main source of information, visible and hidden. The information must be continuously accessible. Selecting relevant information is a real task to succeed.

There are several sources of information on the Web, below is a list not exhaustive, uncategorized and unclassified from these sources: (Arar, 2015)

- Press agencies; Electronic newspapers;
- E-magazines; Online radio stations; Libraries; Institutional sites;
- Specialized newspapers; Electronic journals; (Ghoar, 2017)
- And Encyclopedias, dictionaries;
- The forums; Blogs; Social networks; And Private and public organizations;
- Associations, committees; Scientific publications;
- News feeds; Wikis; Reports, courses, manuals; Podcasts; etc....

3. Chapter Two: Objective of the Study

3.1. Introduction of ICT in Scientific Research

3.1.1. Use of the Internet

The Internet, a communication and information dissemination tool, continues to attract a growing number of users every day. The researchers were among the first to use this new tool. They are characterized by the interest they attach to the exchange of information, its dissemination and its research.

These researchers have become accustomed to using new technologies in their daily work.

With the arrival of the Internet, these technologies are increasingly made available to the researcher, from his place of work or at home, using a computer equipped with a modem and a subscription to a service provider by Internet service. Suddenly, the notion of time or space is transformed and another way of working begins to appear. (Yousfi, 2014)

But like any new technology, the Internet has not been adopted by the entire research community, and there is always some reluctance regarding its use in research work. This is due to several factors, in particular, the reliability of the information circulating via this tool or the difficulty of accessing relevant information.

3.1.2. Electronic Media

The electronic medium is a supporting physical, such as a CD-ROM, DVD or any other material medium on which an electronic document can be recorded; it is not connected to a network and it is independent of the computer equipment of the users who exchange it with each other manually.

The electronic medium allows the exchange of data on a material medium, unlike the exchange by electronic way which does not use such a medium.

As regards the dematerialization of applications and offers relating to public contracts, the electronic medium is not considered an electronic transmission but is similar to the paper medium. Today, a growing part of the scientific heritage is made up of electronic information.

Electronic media are frequently used in scientific research. These are sources of information from the 21st century. This aspect of the contemporaneity of information represents the major reason why the majority of teacher-researchers use these sources of electronic information. (Allahoum, 2014)

These same media are credible and inexpensive sources of information.

Teacher-researchers frequently use electronic media in their research for other reasons as well, namely: updates, easy accessibility, saving time and continuous updating.

These teacher-researchers have become accustomed to using new technologies in their daily work. This is the case, for example, for querying databases, CD-ROMs and the catalogs of automated libraries. However, the use of these technologies requires the researcher to travel to documentation centers or libraries to access information sources.

3.2. Automation of University Libraries

3.2.1. Electronic Resources

The integration of computer and telemetric technologies in university libraries has been a mainstay of the proponents of these knowledge establishments. The obvious enthusiasm of information professionals for new methods of acquiring, processing, storing and distributing study and research documents testifies to the mobilization of the corporation and the additional support provided by decision-makers. To ensure modern and efficient information services to the delight of the university community, and subsequently of research-development and research-action which have an impact on the socio-economic, cultural and technology of the country.

Electronic resources are documents (data or software) encoded to be processed by a computer and considered as a bibliographic unit. Electronic resources include on the one hand information resources stored locally (Anand Y. Kenchakkanavar, 2022). On the other hand, those which require the use of a peripheral connected directly to the computer (for example, a hard disk, a CD-ROM reader), and finally online services (for example, forums or discussion lists, websites). An electronic resource may contain either text, fixed or animated images, or sound. It can also be multimedia.

3.2.2. Hybrid Libraries

The concept of “a hybrid library” has emerged over the The beginning of the twenty-first century, with the development in all categories of the library of documentation and research assistance services based on information and communication technologies. Added to the more traditional activities around print and direct contact with the public.

This concept, therefore, recognizes that neither “traditional” services (based on printed collections) nor electronic services can in themselves constitute appropriate solutions. Both have drawbacks.

In the traditional model:

- Each document (book or periodical issue, volume if the periodicals are bound) must be used successively (only one reader at a time);
- The library can only store a limited selection of all the documents likely to be of interest to its readers;
- The publication processes and the long delays they involve from the author to the publisher first, then to the printer, the distributor, and the library, meaning that the documents are already obsolete when they are integrated into the collections;
- The costs of acquiring and keeping documents that are not in high demand are particularly high, in particular, because of the expenditure on personnel and premises;
- The physical handling of documents (storage or cleaning of shelves) is also very expensive;
- Frequently consulted documents, and manuals, for example, deteriorate and must be replaced, provided of course that they are always available.

In the electronic model:

- The quality of the sources is often uncertain, or quite simply unverifiable;
- It is difficult to browse a document in detail because the display is only screen page after screen page;
- The economic model raises questions, insofar as it translates into significant restrictions in the consultation of valuable information when suppliers want to prevent any “leakage” of their documents into the public domain;
- The preservation of these documents remains an open question, and the legal deposit provisions are very limited;
- The electronic library contributes little to social interaction, because “collective” studies using these technologies still have an artificial character and a limited scope which makes them unattractive. The virtual does not yet have all the attractions of the real.

This brief analysis demonstrates that the undeniable advantages of the electronic or digital model will very probably not be enough to ensure its exclusive domination in the foreseeable future. Not only, indeed, the traditional library, largely articulated around printed matter, still presents a certain number

of advantages, but moreover this "heritage system" (both in terms of content and infrastructures, including regarding publication in traditional media) represents enormous investments, which have been strengthened over the years and retain immense value. It would be inconceivable for society to draw a line under age-old knowledge that is always, and only, available on paper. Beyond these considerations, everything indicates that print remains the preferred medium for most current publications.

3.2.3. Digital libraries

Digital libraries are the newest type of libraries built on collecting and converting information sources into digital formats in order to read and exchange them on computers and digital information networks. Digital libraries are created by acquiring sources produced in digital form, or by converting them to digital form, then describing and controlling them. The bibliography is provided through an automated system or special software for managing digital libraries, and then access to the digital sources is made available via a digital information network or via the Internet. (Madaoui, 2019)

Digitization and information technology means represent the basic pillars of the digital library through:

Making information available in digital form.

Making the most of ICT means and techniques.

Building a digital environment that keeps pace with technical developments in the electronic publishing service, which increases the speed of communication between researchers in the field of scientific production and publishing. (Mahi & Boukenadel, 2020)

Providing and facilitating special capabilities to directly benefit from digital resources and information and communications technology means.

Digital libraries, with all their units, including indexes, resources, software, electronic links, and digital networks, work to serve researchers and beneficiaries of modern digital sources of information. The digital availability of resources service is at the top of these services because of the positives it provides to beneficiaries. Many digital libraries also work to provide subscription to international databases. And the acquisition of modern electronic resources.

The creative features of digital libraries appear in the design of websites that are compatible with modern trends on the Internet, where we find simple

creative sites and we find three-dimensional sites, in addition to sites that combine digital libraries and the traditional library on which these libraries were established in one site that provides digital sources and is known as paper sources that It cannot be displayed for reasons of intellectual and moral rights.

3.3. Scientific Research in a Globalized Framework

3.3.1. The Research professor

A Research professor is a tenured teacher who statutorily divides his activity between Higher Education and Scientific Research and who carries out this activity within a higher education establishment. To make up for the lack of administrative personnel in the universities, it is increasingly obliged to carry out administrative tasks. Although there are several bodies of teacher-researchers, the expression mainly refers to teacher-researchers reporting to the minister in charge of higher education and scientific research besides the Executive Decree No. 08-130 of May 3, 2008 on the special status of teacher-researchers in Algeria.

The teaching/research coupling is by far the most common, with universities generally occupying a central place in national research systems.

Scientific researchers are, however, in general, highly qualified professionals, engineers or holders of a doctorate. The latter is a title sanctioning a professional research experience of about three years on average, concretized by the writing of a work called a thesis. The doctorate is awarded following the evaluation of the thesis, and a presentation (thesis defense) by a jury of scientific personalities.

The precise modalities of this assessment depend on the country, and sometimes also on the university or discipline.

In most countries, it is necessary to be a doctor to have a post of researcher or teacher-researcher in the public sector.

In some countries, there is also a postdoctoral diploma called “habilitation to supervise research”, issued after writing a dissertation and a defense, according to a lighter procedure than that of the doctorate.

This concept of research evolving in constant relation with development makes it possible to ensure better fulfillment of the researcher, in particular by favoring his mobility. The latter is not only a question of career or status but also the state of mind. (Keramane, 1986, p.3)

Is it necessary to recall that the essential characteristics of the scientific spirit are rigor and openness?

Openness to work in multidisciplinary teams, openness to business and the economic world in a more general way. As well as, openness to universal scientific culture, and rejection of any form of compartmentalization, the main enemy of research.

Where these characteristics exist, many results flow from them.

3.3.2. Cooperation at National and International Levels

STI is the first concern of developing countries concerning technology and scientific research in general because they need to know the state of existing scientific and technical knowledge so as to make choices and adaptations required.

The following principles, provisions and measures could govern international relations in this area and promote the two-way flow of information: (UIA, 1980, p. 23)

(1). Action by industrialized countries. These countries have the duty to:

- > To welcome researchers from developing countries to their research centers;
- > To take measures to encourage and promote the communication of the results of their scientific and technical research to research institutions in developing countries;
- > To encourage, through state cultural action funds, the export of scientific and technical publications intended for the general public and specialized audiences;
- > To designate the institutions which will be able to provide information to the developing countries on the range of techniques available and to agree to link their institutions to those of the developing countries thanks in particular to automatic data transmission systems;
- > To help developing countries to set up STI centers;

(2). Action of the developing countries: Based on the application of the principle of the grouping of energies in the field of IST, these countries should attach themselves to:

- > The creation of regional and sub-regional STI centers, alongside the establishment of appropriate national institutions;
- > To give a large place to science and technology in the programs of the mass media by giving priority to audio-visual means;
- > To promote production tools, in particular printing, allowing the massive dissemination of STI;

- > To eliminate the commercial and financial obstacles which hamper the rapid importation and better distribution of scientific and technical publications;
- > The development of their scientific exchanges through the creation or strengthening of scientific and technical associations and the publication of scientific publications at regional and sub-regional levels.

To fully master the process of cooperation and information exchange, a country must acquire the ability to choose, adapt technology and ultimately develop new techniques. (MESRS, 1985, p.4)

In other words, the exchange of information is closely linked to scientific policies and the social and political conditions essential to economic development.

4. Chapter Three: Teachers– researchers at the Faculty of Architecture and Urban Planning, Constantine³ (Algeria) and the Use of ICT

4.1. Algerian Experience in the Use of ICTs in Scientific Research

4.1.1. Automation (partial or full) of University Documentation

The integration of computer and telemetric technologies in university libraries has been a mainstay of the proponents of these knowledge establishments.

The obvious enthusiasm of information professionals for new methods of acquiring, processing, storing and distributing study and research documents testifies to the mobilization of the corporation and the additional support provided by decision-makers. Intending to ensure modern and efficient information services to the delight of the university community, and subsequently of research-development and research-action which have an ipso facto impact on the socio-economic, cultural and technology of the country.

A survey was conducted at the Faculty of Architecture and Urban Planning in April 2022 with a sample of around twenty (20) teacher-researchers. An interview comprising ten (10) leading questions was conducted.

It is precisely a question of wanting to know the reactions and habits of the teacher-researchers questioned concerning the use of ICT in their research activities.

We tried to find out what would be the importance of ICT and automation of university libraries for scientific research.

What would be the place of traditional university libraries and documentation, what is the degree of importance given to the Internet and electronic media and the frequency of use of this technology.

Their ways of approaching ICT, means of access and preferred modes, besides to their attitudes towards the university libraries that use this technology.

Finally, their opinions vis-à-vis ICT, the national ICT policy and the future of university libraries services in the face of this unprecedented growth represented by new information media, documentary software, communication networks and satellites. Here is a summary of the collected results.

The automation of the various tasks at the university libraries

According to the teacher-researchers interviewed, the automation of the various tasks at the university libraries has the effect of facilitating access to information and solving problems relating to STIs.

They also insisted on the fact that the university libraries collection must be made up of mixed documents (traditional and electronic).

The university libraries provides documentary and information monitoring through both paper and online or electronic documentation. This is also what the teachers and researchers interviewed believe.

ICT/traditional library

If you have ICT, what do you do without the services of the traditional library?

This is the question to which the teachers-researchers questioned were in the majority to answer in the negative. They continue to benefit from the services of traditional libraries alongside the consultation of digital resources.

The teachers-researchers questioned would thus have understood the major issue of the flexible transition from traditional library services to services provided by ICT.

The use of ICT requires training

The use of ICT requires the training of both librarians and users. The teachers-researchers interviewed are of this opinion.

The strategy of librarians, their very pride, has long been to be transparent mediators, a possible recourse, but which should be avoidable in most cases. This conception is linked to open access considered a universal remedy. The training of users at the library relies above all on the staff and will rely more and more on them as ICTs invade the libraries and so-called cabled places multiply. (Blanc-Montmayeur, 2022) The library staff must in turn have benefited from training and internships.

The point of view of respondents emphasizes the training of all IST partners who use ICT and emphasizes this need much more on librarians who must guide, orient and train users into good trainers.

ICT/scientific research

The introduction of ICT promotes better services for scientific research. The teacher-researchers interviewed are convinced of this.

The way of conducting research would be profoundly changed by the possibility of immediately transferring large volumes of data. Similarly, e-mail would promote collaboration between teachers-researchers who are geographically distant.

The argument here is that the use of new technologies (essentially the Internet and e-mail) transforms investigations, through a renewed implementation of "old" methods, through the possibility of collecting and analyzing new data and by the evolution of research objects.

Teacher-researchers always trust above all their "invisible colleagues" to be kept informed of current research.

4.2. STI and Gray Literature as a Source and Product of Research

Scientific and Technical Information (STI) can be defined as "all the information produced by research and necessary for scientific activity and industry". The teacher-researcher is at the heart of the knowledge production process: he is at the origin of the research that has been carried out and he is responsible for disseminating the results of his research. This dissemination is done through scientific publications. Scientific journals are the main vehicles for disseminating new knowledge after it has been validated by the review committee. (Chanier, 2004, p. 135)

Scientific and technical information must circulate widely, quickly and efficiently while being of the best possible quality because this dissemination fully participates in the operation of scientific research.

Immediate access to the latest research results is a major challenge. Through library subscriptions, teacher-researchers have the possibility of consulting and downloading the latest publications on paying editorial platforms such as Science Direct and SpringerLink for (science, technology and medicine) STM, and CAIRN and Sage journals for (human and social sciences) SHS. (Joachim, S. 2022)

Scientific and technical information is a driving force for scientific research. All the researchers surveyed were unanimous: they all answered in the

affirmative. The first vector for disseminating research results, scientific and technical information (STI) is a major challenge for the entire scientific community. STI, which is at the heart of research activity, is one of the university's challenges and plays a key role in the national scientific and university system.

The latter, through documentary and scientific structures, contributes to the promotion and dissemination of scientific production: collection, processing, archiving and dissemination of scientific production (particularly in the form of open archives), necessary for the various research communities. At the same time, it leads, in collaboration with other public research establishments, a reflection on the policy for the acquisition of digital resources within a framework set up by the Ministry of Higher Education and Scientific Research. The objective is to rationalize and pool the financial means devoted to the acquisition of these resources.

We tried to find out what would be the importance of IST and cooperation for scientific research.

What would be the nature of the desired university libraries services? How much importance do they place on inter-library cooperation? Inter-university? Between the researchers themselves?

Their ways of apprehending the STI, the means of access and the preferred modes; besides to their attitudes towards the university libraries that harbor this STI. Finally, their opinions vis-à-vis the IST, the national policy of the IST and the future of the services of the university libraries in the face of this unprecedented growth represented by the new information media, communication networks and satellites.

STI/scientific research

The STI must circulate widely, quickly and efficiently while being of the best possible quality because this dissemination participates fully in the operation of scientific research. All respondents are of this opinion. They all share the idea that the IST is served by all national research players: university libraries, specialized documentation centers, research laboratories, extra-university research structures and teacher-researchers subscribed or affiliated to one of the entities aforementioned. These collections are then consulted on paper, by querying databases or on the Internet. Immediate access to the latest research results is a major challenge.

National STI Policy

The existence of a national scientific and technical information (IST) policy strengthens scientific research.

The mastery of scientific information and technique is one of the keys to progress. A major documentation policy should be implemented to provide the country with the necessary tools.

The term IST refers to both research data and the infrastructure that supports them. The concept of research is not limited to its current meaning associated with the university sphere or that of centers devoted to this activity. The IST also intends to play a significant role in the socio-economic context, in close connection with forecasting, or even the implementation of plans included in State policy. The investment that Algeria is making today in the networking of its "data" (*data*) is a notorious example of this.

university librerie services requested

The university librerie services requested by researchers are essentially lists of new acquisitions and updates.

Other services are requested by the researchers but have not been determined. Many reasons can be behind this 'indeterminacy'. We can cite certain attitudes of unjustified personal relationships (favouritism, partiality, cronyism, nepotism, etc.), and certain hierarchical superior behaviors where the person in charge can access the fund as he wishes. This 'indeterminacy' can also hide services that are not common, neither known nor shared by all teacher-researchers.

Most respondents prefer commonplace services, which are provided by many documentary structures, namely the list of new acquisitions and the update in their two forms: manual and electronic. This is what emerges from these statistical data.

Cooperation between university libraries

For fruitful cooperation between the university libraries, more than half of the researchers questioned proposed inter-library coordination (inter-loan, collective catalog, etc.). This is a telltale sign in more than one respect. Interlibrary loan is a process by which one documentary organization obtains from another a document requested by its users, and which is not available in its collection.

Thus, cooperation between libraries is mainly based on a functional logic: user satisfaction.

The main characteristic of the answers provided by the respondents is the importance given to the communication of the STI. The training of librarians, the availability of material and human resources, documentary policies come in second place. The outputs (outputs) take precedence – for them – over the inputs (inputs). This is legitimate in an all-out globalized research environment.

STI/cooperation

Cooperation in all areas is only beneficial. To succeed, it must have well-defined objectives. In the field of STI, it is necessary to plan at the national level in order to succeed in cooperation.

The aim of any cooperation, within a framework of scientific research, is to promote STI and contribute to the continuing education of teacher-researchers. Planning amounts to adopting a national STI policy which is framed by regulations and human resources. This is the synthesis that can be made of the answers given by the respondents. Better funding the STI sector is a question that is constantly being asked, because the better we fund this sector, the more convincing results we will have. The researchers interviewed clearly identified the issue of cooperation in STI and defined it by its most essential elements.

5. CONCLUSION

At the beginning of the third millennium and given the changes brought about by globalization, if education is now considered a productive investment, science has become almost a field of economic activity.

While knowledge is transformed into a commercial good, the university is transformed into a science enterprise. Therefore, any investment in research is likely to be the investment that drives the highest levels. Investment in science and knowledge is the barometer that makes it possible to measure the development of peoples, on the one hand, and constitutes, on the other hand, a national strategic stake in the field of national security and sovereignty.

The scientific research activity within the Faculty of Architecture and Urban Planning is described as follows:

- Develop scientific and technological research by publishing and promoting the results of its research work;
- Participate in the development of fundamental, applied, educational or technological research programs;

- Participate in the dissemination of culture and STI in collaboration with research organizations and with the social and economic sectors concerned;
- Contribute to cooperation between university research, industrial research and all production sectors;
- Participate in international cooperation missions for the progress and sharing of research within the international scientific and cultural community.

This same research is carried out by teacher-researchers in various fields and proportions such as:

- Urban planning, techniques and urban management;
- Architecture and ICT (CAD, DAO, Auto CAD, Archi CAD?...);
- Urban architecture (housing, ecology, etc.).

These areas represent teaching and research that are practiced at the level of three (03) departments and four (04) research laboratories.

One can wonder about the contribution of teacher-researchers from the faculty of architecture and urbanism to the globalized IST, characterized by the integration of ICT in scientific research.

The initial observation of the situation of scientific research at the Faculty of Architecture and Urbanism and hence at Constantine 3 University indicates that if the latter is the leader in the Maghreb, it is not by pure chance.

The effort undertaken by the teacher-researchers and senior executives who work overtime has paid off. This institution must henceforth be taken as a model, in the hope that this constitutes a leitmotif to undertake a common, united and voluntary effort at the level of all the institutions of the country to not only improve their visibility internationally, but also move towards universally accepted quality standards in the field of scientific research.

Suggestions and Recommendations

Among the recommendations that can be made are:

- Gradual automation of the faculty library. This implies its endowment with high-performance computing resources such as microcomputers, connection to the global broadband network (Internet) and reprographic resources;
- Creation of a media library equipped with a multimedia documentary fund, in parallel with the book documentary fund;
- Acquisition of more efficient documentary software with the possibility of online consultation;
- Creation of a university libraries website, a portal and accounts on the various social networks. It would then be a new form of communication;

- Acquisition, management and provision of foreign electronic documentation and rational use of these resources to be acquired through the widening of their access, as far as possible, to all teacher-researchers, doctoral and even magister students and the integration of electronic resources in the national language;
- Highlighting the priority of the field of scientific research, the result of which is the creation of mixed research teams bringing together researchers residing abroad alongside their Algerian counterparts established in Algeria, to share their knowledge and know-how and share their experiences;
- The development of human resources through the mobility of teacher-researchers towards public and private companies. These confirmed skills and these scientific potentialities – far from being negligible – are to be encouraged and promoted with a view to their contribution and the implementation of their knowledge and their know-how in favor of the country's development.

It is therefore a strategy that calls for an effort by the public authorities for the establishment of a national scientific research policy articulated on the coordination, organization, structuring, financing and identification of priority areas. Having an impact on the economic, social and cultural development of the country.

But this strategy cannot achieve its objectives without the participation of business leaders, teacher-researchers, researchers and scientists to strengthen the links of cooperation and collaboration and to promote real synergy. And complementarily between the different operators.

All these activities with a scientific program and modern didactic methods (self-training, self-documentation, etc.) can help the teacher-researcher who was not used to integrating ICT in his research and catch up with him to make a user motivated and decided to use the IST and to frequent the documentary information systems more intensely.

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