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The information society progress: evolution of the Health Information Services

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Abstract. The health sector is an area where information society effects are being clearly visible: new technologies applied to several procedures, no barriers in communication worldwide, faster access to research and scientific information are some examples of a scenario that from now on will be irreversibly close to informational changes. Information services also reflect the effects of the information society, whether in the renewal of their powers, whether in new demands for information professionals. Taking the new paradigm of information science as the theoretical-epistemological reference of this work, the author presents the effects of the paradigmatic transition in the sector of the Health Information Services, using as interpretation framework the Frank Webster's information society approaches: technological, economic, occupational, spatial and cultural.
Keywords. Information Services; Information Society; Health libraries; Hospital libraries; Medical Archives; Hospital Archives; Information Science

1. Introduction

Deep social changes are precipitated as a result of new technologies diffusion, and it emerges the necessity of balancing the benefits and costs of these changes (Cullen, 1998). Communication and information technologies are considered as great forces that model the social, economic and political relations and connections, creating a qualitative new society type: the information society. Activities related to information sources and resources, information flux management or information behaviour, tend to become typical of this information society. Avoiding a deterministic view, we have to consider that information technologies mold the society, but the society also molds technologies. In fact, technologies can deeply influence social life, but they aren't autonomous, thus, they can't be dissociated from the social context where they are being developed (Kovács, 2002).

As far as information science is concerned, it is necessary to remember the words of Harold Borko: "*It is an interdisciplinary science that investigates the*

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properties and behaviour of information, the forces that govern the flow and use of information, and the techniques, both manual and mechanical, of processing information for optimal storage, retrieval, and dissemination" (Borko, 1968).
Advances in technology and the evolution of scientific and technical information boosted the discussion around this subject area, often grounded in studies on librarianship and putting aside the archival studies. However, the development of the designated "new information and communication technologies", occurred mainly in the last decades, and the changes in online information searching facilities, highlighted the fragility of the understanding of the informational phenomenon based on the information support and not in the information itself.

In this context, a new paradigm is emerging, which the authors Malheiro da Silva and Ribeiro (2012) call post-custodial, informational and scientific. In its essential features we have to highlight the "*replacement of the instrumental rationale, as reflected in the expressions "document management" and "information management," by the scientific comprehensive rationale of information in management, i.e., social information is implied in the management process of all entities and organisations, and, therefore, informational practices derive from and are articulated with the conceptions and practices of managers and actors, and with organizational structure and culture, and the information scientist, instead of or before establishing operative rules, must understand the meaning of such practices and present, within certain theoretical models, the more adequate (retro or) prospective solutions".*

Hospital libraries are specialized information services, focusing on patient care and addressing the needs of current information of health professionals. These libraries are directed to individual and collective needs of physicians, nurses, technicians, administrators, and others. Clinical archives, have an important role in the daily activity of institutions, due to access and delivery of paper patient files and constitute a fundamental unit, considering the processing and storage of information that requires special attention due to its sensitive data, regardless of their format. These Services are in deep transformations due to the paradigmatic transitions. In a short period of time, they will necessarily be working closer to each other, in order to extract the most of what information management can bring to organizations (Pestana, 2011; Pestana, 2013).

In order to interpret this challenges, we will present the main aspects of the changes occurring in the health sector in the information society environment based on Frank Webster's model of five definitions: technological, economic, occupational, spatial and cultural. We have to refer, however, that these definitions are supported by criteria that are not exclusive of each definition; they all share some aspects and, in certain cases, are mutually dependent. That's why they can clearly illustrate the present and the future changes in information services.

2. Evolution in the light of Webster's approaches

2.1. Technological

New technologies are one of the most visible indicators of new times and are frequently taken as a sign of the establishment of the information society, including the use of personal computers, new office technologies, online information services and word processors (Webster, 2006). Nevertheless, technological sophistication is not in itself a sufficient condition for the attainment of information society status, although it may well be a necessary prerequisite (Martin, 1995).

Developments in information and communication technologies are increasingly seen as the powerful solution to the problems arisen from health and welfare industries. Most applications are in the electronic patient records and hospital information systems, being used to rationalize and speed up mainly routine tasks such as patient data recording and processing, data transactions between hospitals and administrative procedures.

The Portuguese Health Ministry promoted the development of the Portuguese health information network, RIS, that, through TCP/IP technology, connects several local networks from organizations dependent on the Health Ministry: central ministerial administrative services, hospitals, health regional superintendents and primary care centres. RIS considers the establishment of a structure of equipment, software and services that allows the information exchange between health services including e-mail, telemedicine services, file transfers, internet access, etc. Traditional communication ways like telephone, fax or post couldn't, any longer, satisfy growing necessities of information exchange that the transformations of information society require. Telemedicine associates informatics technology and telecommunications in order to support diagnosis between geographically distant health services. This avoids some patients transport or doubled exams, what contributes to a rational economy of equipments and investment.

On the other hand, health care development depends largely on research. Advances on the RCTS (Science, Technology and Society Network), a knowledge network supported by the Portuguese government and considering schools, universities, scientific organizations, research institutions, libraries and museums, will contribute to future developments on the health care organization and procedures. Through this project, information related to research unities, research teams and their respective reports could be made public. It is also a powerful tool for the interconnection and communication between researchers and between them and scientific institutions.

2.2. Economic

In an economic environment, called many times as global economy, national economies have to search new measures of enhancing productivity and

competitiveness. National markets are disappearing facing growing economy globalization. National space, while strategic economic marc, is being replaced by the emergent global space. The national level still has its importance; however, it is no longer the main strategic degree for scientific development, for technological innovations and for socioeconomic growing. Liberalization and privatizations are accelerating globalization (Kovács, 2002).

As an example the Portuguese Health Ministry created the user card, an electronic card that identifies each National Health System user and considers data as personal identification, Primary Care Centre in the user residential area and allows the user to rapidly access to health care procedures.

Marc Porat distinguished the primary and the secondary information sectors of the economy: the primary considers the economic valuation focusing information goods and services sold in the market, and the secondary considers the activities based on information goods and services produced by public and private bureaucracies.

Health organizations deal with financial resources and have very specific economic value, because they consume products and buy services, including information items. In this context, the health sector benefits of one of the most visible step of the information society: the e-Commerce. Companies and products' information are online and can be instantly ordered, allowing rapid transactions at very competitive prices. In this context, an example of optimization of essential supply chains is the Portuguese Public Health Procurement Catalogue, which is a tool that facilitates the purchase of goods and services through Public Procurement Contracts[1].

2.3. Spatial

The major emphasis of information society is on information networks, which can have profound effects on the organization of the time and space. As Manuel Castells says "distance (physical, social, economic, political, cultural) for a given point or position varies between zero (for any node in the same network) and infinite (for any point external to the network). (...) Networks are open structures, able to expand without limits, integrating new modes as long as they are able to communicate within the network" (Castells, 2000).

In the post-industrial society clock and distance constraints are radically reduced, what makes individuals and corporations capable of managing their affairs effectively on a global scale (Webster, 2006). And as P. W. Daniels says "the expansion of services into the international market place has therefore introduced a greater degree of flexibility, and ultimately competition, into the global urban system".

[1] Retrieved from http://www.catalogo.min-saude.pt/caps/publico/what_is.asp?idioma=EN

In this context, health information services expanded their activities, considering, for example, information exchanges between services in the same country (in the case of patient information) and also the implementation of the open access to scientific information. Physical distance is no longer the reason for information access limitations, being possible their access 24 hours/day.

2.4. Occupational

Daniel Bell suggested that we have achieved an information society when the preponderance of occupations would be found in information work. Latest concerns with technology were displaced by a present emphasis on occupational change as the marker of an information society, changing the previous definition of this new post-industrial age as a conquest of information and communications technologies. A focus on an occupational change transmits an idea of the potential effects of information on professions and, simultaneously, the information generated by recent occupational changes. A point of current discussions is that it is becoming difficult to differentiate the most important dimensions of information work (Webster, 2006).

Theories about information society show that there is a radical transformation of employment structure and of professions. That transformation is visible on the reduce of primary and secondary sectors of activity and on the growing of jobs related to services, mainly from what is called the information sector. There is a fast growing of intellectual, scientific and technical professions. Organizations restructuring, motivated by information and communications technology and stimulated by global competition, carry a deep transformation: work decentralization and its coordination in a communication interactive network. Work flexibility implies the growing diversity of schedules and the individualization of working conditions and workers (Kovács, 2002).

More than ever there are new skills that workers must develop in order to perform their jobs efficiently and this effect is clearly visible in health information services. Any work is now characterized by information resources that need to be rapidly searched, retrieved and analyzed.

On the other hand, the collaboration between, for example, different practitioner disciplines and different professionals increase, although at the beginning, can be found some resistance. This can generate a radical reorganization of existing organizational structures and cultures (Cullen, 1998).

2.5. Cultural

We can accept that contemporary culture is absolutely surrounded by information. According to Frank Webster "we exist in a media saturated environment which means that life is quintessentially about symbolization, about exchanging and receiving – or trying to exchange and resisting reception – messages about ourselves and others. It is in acknowledgment of this

explosion of signification that many writers conceive of our having entered an information society" (Webster, 2006).

Effective social organization has routine surveillance as a practice. Several ways of observing people are expanding like census, medical records and telephone accounts. These advances are useful in many positive ways, but considering the Orwellian dystopia where every individual's actions can be watched and recorded, the individual is loosing control over his own information (Tigerstrom, 1998).

Among personal information, health information is the most intimate and sensitive (Gostin, 1993) and that can cause some concern when considering the possibility of data exchange between health services. Health data collecting and posterior retrieval is of great importance considering public health promotion and diseases prevention. However, privacy and confidentiality must be assured. Portuguese law, following European Community conventions, covers the most sensitive points related to personal data informatics treatment and to privacy protection in electronic communications.

Considering societal changes, developments in technology provided opportunities for combating social exclusion. In the health sector, following that patients and the public in general have the right to be better informed about their health and health care (Norman, 1999), it appeared the so called consumer health information, i.e., information prepared for the general public. This has a very important rule on preventing diseases and in health education, but, on the other hand, reduced the gap between doctors and patients. Doctors are no longer "pivotal authority figures in the operation" (Cullen, 1998). Access to information resources through internet navigation tools can support the empowerment of patients and contribute to their active involvement in health care decisions. However, electronic systems from hospitals and other services increase surveillance and control over personal data.

On the other hand, the growing amount of health information that any one can retrieve from a simple internet search without quality control can be seriously danger to the patient. Inadequate information and improper interpretations by the patient may interfere in a correct treatment process.

3. Conclusion

Information society is a concept that is totally implemented nowadays due to information technologies applications and also due to labour, social and economic transformations that, simultaneously, took place. There are two different opinions about this concept: one that sees information society as something new and that brings great benefits to all aspects of life and another that considers information society as a continuation of industrial developments and that, on the other hand, can bring many negative consequences to present society.

To present the main aspects occurring in the health sector, we based our approach on Frank Webster's model of five definitions: technological, economic, occupational, spatial and cultural. Technology is, perhaps, the most visible side of information society transformations; however, it can't be seen without a close connection to the social side. Technology, on the other hand, allows the establishment of networks, where space and time loose their initial definitions. Geographic distances were totally eliminated by technological expansion of the networks domain. But this global existence brings severe changes to national economies, reducing their weight. Solutions like e-Commerce are being established worldwide.

In this scenario, information activities are growing, motivating the creation of another concept: information economy. However, due to transformations in labour, it is very difficult to determine which the real information activities are. Workers are acquiring now skills that transform radically their activities, being almost impossible to identify a non-informational profession.

All these transformations have their cultural effect. We live permanently in an informational context, where surveillance and action control is more implemented than ever. The achievements of information society can, however, reduce social distances and exclusion, as the new environment allows permanent and fast access to information about all knowledge areas and to social inclusion through easier communications.

The health sector is an area where information society effects are becoming more visible. New technologies applied to distance diagnosis, faster access to scientific and technical information permitting better research, new economic solutions to face financial constraints and online consumer health information are some good examples of societal benefits in the health environment. Individuals' privacy and independence, however, can be in danger if the society doesn't stop the economic ambition.

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