

New Technologies for Knowledge Management in Health: the Medical Apps as support for users

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1. The purpose of the paper

The increasing and frequent use of the new technologies, linked to the use of the web, allowed to satisfy specific and particular needs related to the new emerging information needs, asking for a change to build relationships and effective communication. The development of these technologies to support healthcare professionals, caused a new demand for innovative tools – called medical applications or Medical App – as new technological systems of transmission, creation and sharing of information. On the other hand it's clear how such situation is highly dependent on the impact that new technologies have on society and our lives, so deeply changing and not always consciously, our rhythms, skills, effects, and not least social relations. So, the U.S. Supervisory Authority has launched an intensive phase of analysis and study regarding appropriate proposals to control the Medical Applications downloaded directly to mobile devices, focusing in a specific way for those Apps able to "*Influence the performance or functionality of currently regulated medical devices*" and therefore representing "*a major risk for patients*" (Sole24Ore, September 2013). On this basis, the aim of the research is to explore and analyze the general dynamics of the new phenomenon by getting an updated picture of the different existing Apps related to Medicine Category, available on mobile devices such as smartphones and tablets, to know how applications can support general practitioners and also affect the real quality of patient care.

2. The Theoretical Background

The assumption of the research is the impact of New Information and Communication Technologies in everyday life (ICT). In parallel to the change of ITC, we are witnessing for a process of progressive qualification of the contents and objectives in the transition from data processing to richer contents such as information and knowledge, coming from Knowledge Society.

With "Knowledge Society" is indicated a kind of collective structure in which the ability of humans to innovate the system of things and relationships has become a key instrument for the promotion of social and individual welfare, through the interconnection of people for learning and intelligence (Volonté, 2010). These interconnections promote the creation of a global knowledge society that it is found on the exchange of information and data by highlighting the focus on individual and social learning. The technological infrastructure of the network makes this exchange effective and real, like a unique virtual and global space, able to create conversation, communication and the exchange of ideas (Moreno-Jiménez et al., 2012). The widening of knowledge and information and the strengthening of technological infrastructure based on internet and web allow to remove the physical distances and to change the same concept of time, in order to implement new learning process. So, in this way the "Knowledge Society" is able to organize the acquisition, maintenance, utilization, and distribution of knowledge (Meier, 2012), and it (Moreno- Jiménez et. al., 2009) can be understood as a space oriented to the talent, intelligence, and creativity of the human being, true protagonist of this new society. The main objective of the "Knowledge Society" focuses on building partnerships and platforms that allow the integration of the skills of all actors involved in the process of resolution, the promotion of interrelations and the improvement of society (in terms of quality of life and cohesion). The four key aspects of this " Knowledge Society" are: 1. the increasing value of intangible aspects; 2. the de-territorialisation of knowledge and power; 3. the interconnection between the actors involved in the decision making processes and 4. the importance of the human factor, particularly regarding continuous learning and education (Moreno-Jiménez and Polasek, 2005). In the "Knowledge Society" the principle role is related to Information and Communication Technologies (ICT), that gives to people the opportunity to produce a lot of information and to facilitate its collection, processing, handling, storage, retrieval and exchange. In recent last years, the knowledge and information (that is an implicit assumption of knowledge), used in addition to traditional paper-based the most innovative new technologies and their interrelationships through the web. So, this situation changed the way in which people can communicate and access to a lot of data and information, but often unfortunately they are redundant, irrelevant

or of poor quality (Albano, 2011). Furthermore in this new changing context, a particular role plays the Apps (on mobile devices), like a new technological systems of transmission, creation and sharing of knowledge. In fact, the use of the internet through computers and the use of WIFI networks allowed a further evolutionary step. The use of new generation phones and the development of tablet and / or laptop computers led to a freely "available" and "user friendly" knowledge in order to modify or stimulate new ways of using it for learning and exploration. If this is true in general terms, the implementation of specific Apps in the health sector - available for download on mobile devices (like smartphones and tablets) - spurred particular interest to investigate this phenomenon.

3. The research gap

The contribution provides a reflection on how the use of Apps may improve the relationship with the different stakeholders involved by giving qualitative answers in real time on the basis of provided data, creating a trust community, through the sharing of information and offering a support to the different users as well. In fact, the knowledge of the use and the spreading of new technological systems, such as Apps - for specific and particular demands related to the new emerging information needs in the medical field - give rise to doubts concerning safety, privacy and reliability of information itself. So, the aim of the work would like to know the real motivations which drive patients to use the device; in fact, the users themselves in the overall process play an important role by applying the information they have to the interested App and evaluating whether it meets their needs.

4. The chosen approach

The approach is inductive, starting from a general classification of words related to the category medicine, following the survey made by one main economic italian journal (Sole24Ore, 12/2013). So, through empirical research on all Apps present in the Mac-Ios and Android systems, it was possible to know the offer of medical applications in different fields related to the selected keywords. Therefore the focus was to know the impact of these new technologies on the relationship with the users. The process of research pursued will have to converge to provide new answers to new emerging information needs in health care, in order to know and improve the approach to the health of the citizens / patients by means of specific dedicated Apps. The analysis of found Applications can be traced back to the main needs of knowledge in the medical field highlighted by the users of tablets and smartphones and so identify new consumer behaviors in Health.

5. The methods of analysis

The methodology adopted a mixed approach based on two steps: the on the desk step explores the phenomenon and underlines its characteristics and peculiarities, through the study of the main literature; the on the job step, is focused to obtain a survey of the different Medical Applications existing in the national context through principle operating systems; the resulting mapping gives us identifying keys in order to understand the phenomenon and suggestions for improvement. Specifically, in the second phase, focus is on the figure of user / patient and so it has been articulated in order to understand the ways of its fruition, following the process of using the App: a) identification of keywords with which it's possible to access the services offered by Apps, belonging to Medicine Category (source: Sole24ore – Special Report on Health, December 2013) Table n°1; b) research and taxonomy of available Apps in the Italian context by Mac IOs and Android system, with smartphones and tablets; c) focus and selection the resulting Apps, respect the costs related to them in order to classify the various information; d) furthermore, another selection covered those apps with comments; e) definition of specific database.

Table. n°1 Test sample: Keywords selected

1. Psychology	2. Heart	3. Diabetes
4. Influence	5. Heart attack	6. Obesity
7. Antioxidant	8. Diet	9. Cancer
10. Drugs		

Source: Our elaboration on Sole24Ore \ Health, December 2013;

6. The main findings and contributions

Computer applications for health are created to interact directly with consumers, with or without the presence of a health professional, helping to better manage their own health (Parsons, 2011). The Apps - Medicine category - are tools that can support health care by increasing the participation in the awareness of one's state of health and, therefore, its ability to self-management. The objectives that propose the Apps in medicine are to increase patient involvement in their own treatment, improving monitoring of the process of care and supporting them in the search for alternatives to the pathology observed. Overall, the number of the inspected application was No. 3156, from these early data were extrapolated No. 224 Apps related to the category Medicine. It was further skimmed the number, then focusing only on applications containing comments and revisions by user \ patients. A first

consideration is obtained from the fact that by typing the word "heart attack" - "obesity" - "antioxidants" or "diet", not always available and downloadable Apps belong to the category "medicine" but - in most cases - such categories fall within the "other" that collects from item as "lifestyle" - "entertainment" - "fitness" - up to category "games". In the event that the Apps that appear on the home page belong to the category "medicine", these are used as an aid in the diagnosis and treatment of the disease, often portraying similar agendas, where the user can register their clinical values (eg. Level of insulin in the blood, etc ...); or Glossary that can help you understand the disease or in other cases guidelines on what to do in case of feedback to specific diagnoses, etc ... In addition it has been shown that there are Apps that through a virtual tutor explain the human organism. In this first phase, the data are limited to infer the usefulness of Apps in the process of accompaniment to medical care or what motivates you to discharge the Apps to self-manage themselves. Through the comments and reviews, released voluntarily by users on Apps, other information can be found (in 66% of cases there are no comments and reviews, in 30% of cases are positive and in the remaining 4% are negative comments). "Excellent can be used in an easy and intuitive. Very useful "; "Great job, fast and intuitive. Well developed in the preparation of drugs "; "Not complete lack other neoplasms. I hope that it is added". "A real failure nor refunded. "A large number of Apps are, to date, available and many others are added every month. Use of Smartphone and Tablet in the world, led to the creation of applications widely available and suitable for different uses. Through the study of the phenomenon the work want to know the real reasons that lead users (patients) to turn the instrument (Apps), given the important role in the overall process, from the request of use, its availability, to the satisfaction of a need, expressing specific feedback on the product and respect their needs. The Apps have the potential to play a significant role in the education of the patient's own health and in disease management. There is little information available (in literature) on the use of Apps medical and safety / trust that the user-patient than this instrument, as the only existing review process Apps a simple score (user) with Comment (Rodrigues and Brody, 2011). Only form of user protection is the possibility to download the application after analyzing the authenticity and accuracy by reading the reviews and comments, made by those who have downloaded and \ are using the Apps. Therefore on these initial considerations, deepen their knowledge of the use and dissemination of new technological systems such as App, for specific and special needs related to new information needs emerging in health, lets investigate aspects of health-related technology, focusing typical themes such as those related to the reputation and reliability instrumental, security of data processing, privacy.

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