THE IMPLEMENTATION OF ELECTRONIC MEDICAL RECORDS: AN EMPIRICAL CASE

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Abstract

Healthcare organizations are subject to different sources of change. The main factor of coercive change, which in recent years has been affecting healthcare organizations, is technological innovation and communication (ICT). The applications of ICT in the health sector are known as E-Health. These changes have translated into the health sector with the introduction of new tools such as medical certificates and digital prescriptions, the Electronic Medical Record (EMR), the Electronic Health Record Longitudinal (EHR), computerized reservation systems, etc. Several studies in the literature have highlighted the strategic importance for the corporate governance of these tools, and in particular of the EMR, it is the main electronic archiving tool, used to collect, store and display health and social-health data of citizens.

This study intends to answer the following research question: what are the enabling conditions that have favoured the EMR implementation process? To achieve its objective, this research first examines the relevant literature and analyses a case study of the Cosenza PHS. The case of the PHS of Cosenza, due to its characteristics, offers interesting insights on the subject of E-Health. The conclusions offer suggestions and developments for research in the field

Keywords: e-Health, EMR, Health care organization, Enabling Conditions.

1 Introduction

Healthcare organizations are characterized by high organizational complexity (Laviset al. 2012). In the last decade, Information and Communication Technology (ICT) appears as a driver of organizational change. ICT is becoming increasingly widespread in healthcare, significantly improving both the quality and quantity of services provided to citizens / users. ICT means all those digital and analog technologies that facilitate the acquisition, processing, storage and exchange of information through electronic communication. The ICT applied to the field of Health are better known as e-health (Eysenbach, 2001; Oh, 2005), ie "the use of emerging information and communication interactive technology, especially the Internet, to improve or enable health and health care" (Eng, 2001). In literature, there are several definitions of E-Health.

In broader sense and according to the European Commission, E-Health "includes all the applications of ICT in the wide range of functions of a health system" (European Commission, 2004) that concern all the various operators in the sector such as: doctors, nurses, hospital managers, data management specialists, social security managers and patients through disease prevention or better management of the same (Di Carlo and Santarelli, 2013). E-Health is a real innovation paradigm, and it combines both new technologies, clinical and administrative processes, skills and culture of the people working in the system (Healthcare Digital Agenda,2012).

The possibility of being able to connect different sources of information (management, health and clinical data) allows organizations to have a healthcare information asset, both for research-related needs, and for epidemiological studies and managerial needs. As a direct consequence, there has been the definition of new scenarios for the management of clinical information flows (Buccoliero and Nasi, 2004). In accord to Buccoliero et. al. (2018), the greatest challenge, for E-Health, is undoubtedly the cultural change with which health professionals, must adopt a new perspective oriented towards the sharing of clinical information and its transparent management (Eysenbach, 2001). In this way, there is a transformation of the existing relationships between health service providers and patients. Particular attention is paid precisely to the concept of patient empowerment and the role that ICT plays in guaranteeing its concrete expression of it (Buccoliero et. al, 2018). The concept of patient empowerment can be defined as: "a process of personal development for which the patient / individual is endowed with knowledge, skills and awareness that allow him (in whole or in part) to determine himself in relation to his health, in the "ambit of a new process in which the healthcare professional can become, a facilitator working within a partnership relationship, at the discretion of the patient, no longer of authority" (Bellio, 2009, pp. 413-434). The need of effective and efficiently manage the wealth of all the informations needed to provide adequate guidance to management coordination and control activities, to stakeholders and institutions, is an imperative that has become increasingly pressing for organizations and for the Healthcare organizations specifically, which operate in an environment characterized by rapid technological innovation processes and by frequent evolutions of the institutional rules that jointly contribute to determining a physiological organizational imbalance. The organizational approach therefore goes in search of the best conditions of adoption and use of information systems (Pontiggia, 1997), paying particular attention to the conditions of dynamic and static coherence between ICT and organizational and contextual variables in order to achieve satisfaction objectives and economic viability (Ravagnani, 2000). In recent years, the rapid evolution of ICT infrastructures in the health mode and access to patient data has offered health professionals conditions that had never been previously provided. They have allowed the dissemination of a key element in health systems, namely the emergence of EMR. The Study Center of Kaiser Foundation has shown how to introduce ICT in healthcare to be considered an inevitable step in the reform process of this sector, as it can be a tool to achieve a more effective reorganization of the Health System.

E-Health tools are numerous such as electronic medical certificates and digital prescriptions, Electronic Medical Record (EMR), Electronic Health Record Longitudinal (EHR Longitudinal), computerized booking systems, electronic access to reports, management information systems, the wide range of telemedicine services (telemonitoring, teleconsultation, telerehabilitation, etc.).

Focusing on EHR system, the International Organization for Standardization (ISO) defines the main purpose of an EHR system as the provision of a patient-centred record of health information that supports care within a medical environment (ISO, 2005). The implementation of EHR systems and other health information technology initiatives in support of health care delivery has become common in countries' national healthcare systems (Fuad et.al., 2012; Yoshida. 2013) The wide adoption of EHR systems is supported by reports of their positive impact on the quality and cost of healthcare delivery. More specifically, EMR systems are reported to contribute to reducing the incidence of problems such as lost records, duplication of effort, mistaken identity, drug administration errors, idiosyncratic clinical decisions and inefficient billing (Appari et.al, 2012; Institute of Medicine, 2009; Nguyen et.al, 2014). Since 1999, this term has appeared, in the specific literature, with the aim of understanding everything related to ICT and medicine (Eysenbach, 1999).

Another most common EHR tool is Electronic Medical Record (EMR). This tool supporting the management activity in Healthcare Organizations with the aim to being able to manage patient data, increasing efficiency in the management of internal processes and helping to improve quality of services rendered. Recent studies have highlighted the strategic importance for corporate governance of these instruments, and in particular of the EMR. The study conducted by Casati (2000), highlighted that the EMR has become the pivot of the information system in health and hospital area, acting as a hinge and a connector to the integration of information flows both in the management area and in the medical and welfare. The EMR is the main electronic archiving tool, used to collect, store and display health and social-health data of citizens. It is expected that the EMR, first and secondly the EHR Longitudinal, will generate not only economic benefits - or direct savings on the production, storage and reproduction of health documents - but also the significant reduction in the time needed to identify the previous patient clinics folders.

The EMR is the official and legally recognized document that records the clinical actions performed on the hospitalized patient. An EMR is a computerized record of medical records created within an assisting organization, such as a hospital or doctor's office. Therefore, the EMR becomes a useful tool to support the daily activities of clinical staff (doctors and nurses) who work on the patient, and this supporting role is also fundamental in terms of integration with the various analysis and reporting services of the health organization. The EMR is part of a local and autonomous information system, which allows the storage, retrieval and modification of the data it contains.

In the academic literature on the subject, various empirical evidences have highlighted how the adoption of ICT tools took place without a clear overview. The ICT tools in healthcare, or E-Health, must be able to take into account the management data, those of a clinical nature, the information of a welfare nature.

The above conditions (push for change and support of the European Commission), led the Cosenza Provincial Healthcare Services (PHS) to implement the EMR system, within different hospital facilities. The above highlights how health organizations are subject to coercive forces of change. With the aim of understanding how to best manage technological change within healthcare organizations, in order to make processes more efficient, this document intends to answer the following research question: What are the enabling conditions that have favored the process of EMR implementation? To achieve its objective, this research, first examines the relevant literature and illustrates the research methodology and approach. Then, the study analyzes the implementation project of the Cosenza PHS evaluating the enabling factors and the impact of the organization. The document closes with conclusions and suggestions for research field.

2 Methodology

The study adopts a qualitative approach based on a case study. The case was due to the innovative features of the organization and was conducted according to the methods and instructions suggested by Yin (2009). This involved the collection of data through semi-structured interviews and analysis documents. Access to various information sources allowed the authors to collect a large amount of

data, increasing the quality of the information obtained (Benbasat, 1984). A qualitative study seemed particularly suitable for the purpose of the research and the complexity of the phenomenon, since it allows taking into consideration the specific characteristics of the context (internal and external) of the organization (Bamberger, 2000), as well as exploring the implementation process of the EMR within the health system and the enabling factors. In particular, the study examines the case of the Provincial Health Services (PHS) of Cosenza. Data collection was conducted in the second part of 2019 using the typical Yin case study techniques (2009), i.e. interviews with decision makers (and specifically with the Information Systems Manager) and analysis of documentary materials related to the PHS and to the introduction of ICT in the organizational structure. The interview lasted about 50 minutes and was recorded (with the consent of the interviewee) and was subsequently analyzed in order to better understand our research question. Later, they were emphasized in the discussion section.

This methodology sets the main limitation of the generalization of the results. The objective of this study is not to draw conclusions of universal validity, but rather to derive some suggestions for further and more in-depth analyzes on the enabling factors and characteristics of the EMR and its relative organizational impact (Figure 1).



Figure 1. Cycle of Methodology. Source: our elaboration.

3. Theoretical background: The enabling conditions of the EMR implementation in healthcare organization

E-health is the application of information and communication technologies (ICT) to health care. The promote of the adoption has been described as an organization's decision to acquire a technology and make it available to the users (Hu et al., 2000), to improve communication, sharing and tracking of health care and to facilitate the coordination of medical care. The implementation of Electronic Medical Record (EMR) has consistently attracted the attention of research scientific. Because, the adoption of information systems in healthcare is no less significant than in any other organization. The Healthcare organizations are in-formation-intensive professional settings, where clinical decisions and the provision of patient-centred care rely on the timely accessibility of accurate information. Not surprisingly, at the heart of the application of ICT in health care is the EMR in which medical data about the patient is recorded. Access and use of the EMR is fundamental; the insertion of data into the

record irrespective of its source (information system, manual entry, monitoring device, and so forth), maintaining and building it, and then making the record available to those who need it, presents obvious integration challenges. The link-ing of records to clinical guidelines and protocols is essential if best-practice is to be embedded as an integral part of the health care delivery process and if the problems associated with wide-spread variations in treatment costs and outcomes are to be addressed. EMR are increasingly common in medical practice. They represent a relatively novel and rich resource for clinical research. The provides great potential for improving clinical research efficiency and medical quality. The use of EMR facilitates healthcare professionals' access to electronically-stored health information in a digital format (Chaudhry et al.,2006; Tan et al., 2006; Ventres et al.,2006; King et al.,2014), but its successful implementation depends on a combination of both technical and socio-organizational factors (Nguyen et al.,2014). In particular, the confident adoption and use of EMR systems by clinicians is crucial for the overall success of EMR systems implementation, whereas a hasty deployment combined with lack of support and user resistance may result in implementation failure (Ford et al.,2019).

In dealing with the complexity of EMR implementation it is helpful to know which factors are seen as important in the literature on EMR implementation.

A literature review on EMR implementation for the identify enabling conditions of the EMR was conducted. Databases (Elsevier and Web of Science) used included 81 articles. Search terms included EMR, implementation, enabling conditions. Articles had to meet the following requirements: (1) written in English, (2) full text available online, (3) based on primary empirical data, (4) enabling condition, (5) EMR implementation.

Of the 81 initially identified articles, this study analyzes the 24 articles that met the requirements. From these articles, 24 papers were identified that are generally applicable and these were placed in a framework consisting of the following three interacting dimensions: (1) EMR context, (2) EMR content, and (3) EMR implementation process, (4) Enabling conditions of the EMR.



Figure 2: Papers included in the studies Source: Our Elaboration

In the literature, several terms are used to refer to e-Health tools. Commonly used terms are identified by ISO (International Organization for Standardization). ISO considers Electronic Medical Record (EMR) to be an overall term for "a repository of information regarding the health status of a subject of care, in computer processable form, and restricted to the medical domain" (16, p. 13). ISO uses different terms to describe various types of tools in healthcare. These include the Electronic Patient Record (EPR) and Computerized Patient Record (CPR), Electronic Client Record (ECR), Personal

Health Record (PHR) and Digital Medical Record (DMR), Health Information Technology (HIT), and Clinical Information System (CIS).

An medical record contains various types of information, integrating billing, pharmacy, radiology, laboratory information and others (Dean *et.al.*,2009). Is defined by a triple tuple: (patient data, patient profile and clinical data). Patient data contains basic information of a patient, patient profile usually includes summary of a patient's medical history and clinical data stores detailed clinical data (Lin *et.al.*, 2015). EMR are produced from different medical systems, usually, an electronic medical record is either an XML file consisting of tag-value pairs stored in file systems, or is relational record stored in relational database (Lin *et.al.*, 2015). Use of normalized reference model to represent medical records is important to enhance correct interpretation of clinical findings, interoperability with other systems as well as compatibility with research data (Lee *et.al*, 2013). Health Level Seven – Clinical Document Architecture (HL7-CDA) is one of the most common reference models for clinical systems. So, the EMR is part of a local and autonomous information system, which allows the storage, retrieval and modification of the data it contains.

According to the standards of the Internation Joint Commission (2011) the aims of the Medical Record can be summarized in five fundamental points:

1) support the planning and evaluation of care;

2) constitute documentary evidence of the appropriateness of the care provided with respect to the standards;

3) communication tool aimed at facilitating operational integration to guarantee continuity of care;

4) constitute a data source for scientific studies and clinical research, training activities, etc...;

5) trace the activities carried out to allow to trace the persons responsible, the chronology and the methods of execution.

From these considerations, it is clear that the EMR represents a complex tool in several aspects: heterogeneous content, differentiated necessary knowledge for the implementation of the instrument and, finally, the relevance of the issues related to privacy and security in terms of treatment, conservation and data storage. Obviously, the development and diffusion of an information system of EMR must be set in a context of ICT infrastructures capable of ensuring the most rigorous respect for the principles of security and privacy of data and clinical ones in particular. On the other hand, on the basis of the evidences found, the Clinical Record (both paper and electronic) is a public act and the health data entered are considered sensitive data, which is why there is the problem of a possible improper use of the information present, also due to the transformation of management methods, from exclusively paper methods to the use of computer media both for data collection and storage (Ravizza and Pasini, 2001); in fact, while a paper archive is more difficult to access, management by means of computers, usually connected in network environments, makes it relatively easy to access and, therefore, to consult and duplicate personal data, imposing greater attention on the use of the EMR itself, which must therefore fully comply with the rules governing the protection of such data. On the other hand, the EMR was created to collect all the descriptions of a person's health events, related to his interaction with a health facility (Rossi Mori and Maceratini, 2009), collecting heterogeneous data relevant to the management of the hospitalized patient, being therefore similar to the paper medical record, as an individual information tool aimed at detecting all the significant registry and clinical information relating to a patient and a single episode of hospitalization (Ministry of Health, 1992). In the following table it is possible to summarize the characteristic elements of the EMR.

Areas of Application	• Sigle health organization (Local Healthcare organization, Hospital)
Purpose	• Integration between different professions,
	• Information sharing,
	Creation of new knowledge
	• Digitization of information flows
	Automation of operating flows

	• Support for the daily activities of clinical staff
Subject	• Personal data for patient identification;
	• Historical trend and traceability of symptoms, clinical conditions and any complications;
	• Laboratory or other examinations and their results;
	• Therapeutic interventions, results and adverse events;
	• The discharge report delivered to the patient on discharge.
Documents Managed:	Medical history and clinical diary
	Reports of clinical and diagnostic exams
	Reports of specialist visits
	• Documentation on laboratory tests, etc

 Table 1.
 Characteristics of the Electronic Medical Record. Source: our elaboration

The EMR today assumes a much more complex function than in the past, since from a suitable instrument to improve the personal efficiency of the individual health worker, it passes to acquire its own autonomous role in the overall organization of the health system, as the primary source of clinical data (from protect), but at the same time make it available to the whole system for its needs. In summary, the content of the EMR may be as follows:

- Medical history and clinical diary
- Clinical and instrumental examination reports
- Reports of specialist visits
- Documents drawn up by nursing staff (nursing record)
- Non-medical components (information entered by social workers and midwives).

From what has been said, the doctor is not the only compiler of the Medical Record, given the competition of more operators for the definition of its content; this implies that its complexity (in terms of information gathered) does not compromise the readability of the medical record itself (Ravizza and Pasini, 2001). On the other hand, also the users are different: from the healthcare staff (who provides assistance) to the patients and their families (who uses the assistance), but also the health management both at the level of the single operating unit / healthcare company, and at the level of regional and national (who manages the assistance).

EMR offers several key advantages over paper medical records (PMR) related to quality of care, efficiency and high level of patient safety (Chantler *et.al.*, 2006). In addition, EMR is a valuable source of quality assurance of medical practice and research. Effective use of EMR requires structured data entry; which can be a challenge for users due to EMR method of interaction, which does not coincide with their mental models and do not meet the requirements of document flow (Stack *et al.*, 2014; Belde *et al.*, 2013). Poorly designed and cumbersome user interfaces of EMR input data can complicate the structured data-entry that will lead to a deterioration of data quality and incompleteness of data. Consequently, this can lead to suboptimal functioning of information systems of medical technology, integrated into the EMR.

The following table shows the advantages and disadvantages associated with the implementation of an EMR in a healthcare facility.

Advantages	Disadvantages	
Connection between patient data and clinical	Management of big amounts data	
information		

Data extrapolation for health prevention and research	Increased consume of time for prescribers1 for enter data	
Improved readability and process traceability; Creation of alert systems, interactive data flow sheets and ad hoc diagnostic-therapeutic flow- charts for pathology.	Impact on clinical staff procedures (Need for new procedures to use the information system) ₂	
Error reduction (Risk Management)3	High costs for system activation and maintenance	
Reduction of the administrative and medical time4	Need for constant training;	
Creation of a multidisciplinary team	Reluctance on the part of doctors to understand the EMR as a clinical and not an administrative tool	
Simultaneous and immediate access to information restricted to authorized persons with authentication mechanism	Formalized and codified language specific to each structure	

 Table 2.
 Advantages and Disvantages of EMRs. Source: our elaboration

EMR are seen as a way to simplify the management of patient information, increase productivity and lower costs associated with medical information management. The features and advantages disadvantages shown in the table show how the adoption of an EMR within a health organization necessarily requires that the technological infrastructure allow an adequate integration between the EMR system and the company information system in its components clinical, administrative and management (Buccolieri *et. al.*, 2005). The integration of information management to healthcare providers has enhanced the information that is made available to physicians. It has also provided a competitive advantage for organizations. The implementation of the EMR system in healthcare facilities has not only provided potential benefits to improved quality of care, but there are significant factors to consider associated which human factors, workflows and environmental conditions. These factors should be considered to improve the quality and cost of patient care, as well as employee and patient safety.

In recent years, EMRs have been implemented by an ever increasing number of hospitals around the world. EMR implementation initiatives tend to be driven by the promise of enhanced integration and availability of patient data, by the need to improve efficiency and cost-effectiveness, by a changing doctor-patient relationship toward one where care is shared by a team of health care professionals, and/or by the need to deal with a more complex and rapidly changing environment.

In fact, if we try to look beyond the management system of the EMR we easily come to the definition of the EHR, its natural evolution. Regarding the enabling conditions of the EMR in the different structures, the literature highlights some:

Usability of the system, emergent behaviours, requirements analysis, training, change management, and project organization.

Usability of the system	Excessive clicking to navigate and perform functions;	
	Additional processes/activities that clinicians have to	

¹ The doctor is not the only compiler of the medical record, but more operators combine to define the content.

² The introduction of a medical record system in medical practice must include an improvement in procedures by introducing logics of incremental and non-radical organizational change.

³ In an article published in JAMA in 1998, the authors show how a computer system has reduced by 84% the mistakes on patients hospitalized in two different hospitals. The introduction involves an improvement in hospital practice and at the same time a system to reduce the risk of the hospitalized patient.

⁴ In particular in the study of Joos et al. (2006) in "An Electronic Medical Record in Primary Care: Impact on Satisfaction, Work Efficiency and Clinic Processes", AMIA Annu Symp Proc; The authors have shown that the adoption of the electronic medical record shows a reduction in the time needed to define the patient's diagnosis, given the greater availability of accurate and real-time information.

	perform;	
	Stakeholders resistance, the reluctance or disapproval	
	coming from users in regards to adopting and using;	
	Lack of trust in system.	
Emergent behaviours	The reluctance or disapproval coming from users in	
	regards to adopting and using the new information	
	system	
Requirements analysis	The feedback, participation and suggested changes	
	from users	
Training	The lack of training for the users whether it is in terms	
	of content or duration irrelevant and poor training	
	materials	
Change management	This involves the continuous of the user feedback;	
	The reluctance of the senior staff to adopt and learn	
	the new implemented system.	
Project organization	The lack of direction and planning in assigning	
	responsibilities to the different teams in the project;	
	Poor communication;	
	Poor information dissemination that relates to the	
	system functions.	

 Table 3.
 Enabling Conditions of EMRs. Source: our elaboration

Coping with the complexity of EMR implementation requires increased communication and horizontal collaboration amongst stakeholders. A fundamental shift is required from being focused on pushing healthcare technology to using EMR for improving the working practice of clinical staff.

4 The case study Analysis

4.1 Organizational context

E-Health is an important part of the European Commission's action plan so-called "e-Europe". E-Health imposes a re-organization of internal organizational processes aimed at improving the costquality ratio of services, eliminating waste and inefficiency. The e-health tools introduced in Italy are oriented to a dual typology of stakeholders: The first type are administrations and health professionals; the second type are the citizens.

This study is case study based. The Provincial Health Services (PHS) of Cosenza was chosen because it has particular organizational characteristics and for the E-health implementation project started. Therefore, the study of this case could bring out the main obstacles to the implementation of E-Health. The Cosenza PHS is organized as a network composed of social-health districts, hospitals, departments, complex operating structures and simple departments with a departmental value. The following figure 2 shows the organizational distribution in the territory.



Figure 2. The Cosenza PHS: Territory distribution. Source: Website Cosenza PHS

The organic equipment includes a total of 6,387 employees. The following table shows the relative situation of personnel requirements by professional Table 4.

Category	Employees
Medici e Veterinari	1.644
Personale infermieristico	1.967
Operatori Socio- Sanitari	529
Dirigenza sanitaria non medica	115
Dirigenti sanitari (farmacisti)	49
Personale tecnico- sanitario	293
Personale di vigilanza ed ispezione	86
Ruolo Tecnico	714
Ruolo amministrativo	684
Total	6.387

 Table 4.
 Employeers distribution PHS of Cosenza. Source: our adaption

The goal is to automate and rationalize the most important organizational processes, the number and complexity of which are much higher than most other healthcare workers (Bergamaschi et al., 2006). The EMR is one of the projects currently being developed and implemented by the Cosenza PHS. In order to better manage the implementation of the EMR, the General Management has decided to start the Master Patient Index project (MPI) with company act no. 1956 of 2018. The Cosenza PHS for 2017 registered 33,185 admissions public hospitals in PHS. The hospital activity dedicated to the treatment of acute cases and complex rehabilitation and long-term care cases. This process produces the largest number of patents registrations, medical records, and characterized by greater complexity and documentary richness. The EMR implementation and management project lasts three years. The activity consists in the establishment of a company Master Patient Index integrated with the assisted population of the SISR. The purpose is to take the data contained in the SISR Calabria and to integrate them with those detected by the hospitals during the stages of hospitalization, admission waiting list or deriving from the collection of data from previous medical records. Specifically, the phases of the

implementation process are proposed below and relate to the achievement of the following objectives at all the head offices:

- 1st Phase: rapid activation of the EMR and disposal of the traditional medical records (MR);
- 2nd Phase: Securing the traditional MRs by acquiring them in digital format;
- 3rd Phase: Possibility of eliminating paper EMs after digitization.

PHS has estimated that the traditional MR, are around 1,054,000. A critical situation refers to the wear of traditional MR. A part of the documents has become almost illegible due to the discoloration of the inks or the tendency to deteriorate on paper. Furthermore, there are situations in which the files are logistically preserved. The Cosenza PHS was chosen as a unit of analysis for this study precisely because its project is active and functioning and can provide a clear and faithful view of the enabling characteristics of the EMR.

4.2. Case Study

The observation of the case study was in two ways. A first observation was based on the document analysis. The documents taken into consideration were all public documents concerning the introduction of the EMR of both the PHS and the Calabria region. The collected material was examined and discussed in order to refine and improve the coding process.

The second observation was based on a semi-structured interview, which mainly concerned the introduction of the EMR. The semi-structured interviews consisted of 12 questions on the following topics: 1) the phases of the implementation process; 2) The characteristics and conditions of qualification; 3) future organizational impacts (potential advantages / benefits) of the EMR. The interview lasted 50 minutes. The enabling conditions, reported in the literature (Table 3), influence the introduction of the EMR. In particular, the system could have been excessively complicated and able to provide an organizational model for the organization, which could have created a climate of dissatisfaction, tension and resistance to imposed changes. This resistance and dissatisfaction could hinder the return of positive or negative feedback and thus make the job. Things could be complicated by the culture of the organization; therefore, cultures must be carefully evaluated during the planning and implementation phase (Pagliari, 2007, Ludwick & Doucette, 2009, Boonstra & Broekhuis, 2010). An important aspect identified by the analysis is the perception of the Information System Manager (ISM) of the possibility of a significant reduction of inefficiencies compared to the past, which leads to efficiency and the reduction of errors as positive factors. The ISM responsible stated that the previous paper procedure was more prone to errors (inaccurate requests, potential misunderstandings and illegibility of handwritten notes). Today, the highest level of uniformity and integration of procedures, made possible by the standardization introduced by computerized routines, has resulted in efficiency gains and reduced organizational errors and redundancies. The IS has transmitted a positive general response to the implementation process of the new system. The standardization and uniformity of work procedures should significantly improve the quality of the service with the reduction of errors and better time management. Furthermore, the system will provide clinicians with an important decision support tool for obtaining clear and accurate information for patient diagnosis.

5. Conclusion and Discussions

In recent years, the healthcare sector is constantly changing. The first change was a different approach to the service delivery model: the focus is no longer on the individual service but on the patient. This radically changes the design of information systems, in fact we move from "business" and "limited" projects to inter-company projects. In a scenario of this type, the introduction of integrated and advanced information systems is fundamental for the management of the patient and the clinical

information concerning him, so that they can be shared and made available to the various professionals who become part of the patient's diagnostic-therapeutic-assistance process.

The use of the Electronic Medical Record is an example of a policy conducted on the basis of good goals (benefits in terms of quality of care and reduction of health care costs).

Designing digital solutions (information technology, IT) to support clinical work without compromising is a major challenge. The complexity and functions of EHRs vary (Ancker et al.,2015; Keasberry et.al.2017) and many healthcare professionals are unsatisfied with and frustrated by the EHRs currently used (Cresswell et.al 2013; Park, et.al.,2012; Roman, et.al, 2017). Many systems are perceived as having poor usability. A poor fit between technology and clinical workflow could cause errors and subsequent unintended changes, with unanticipated clinical consequences (Cresswell et.al, 2013; Park et. Al.2012; Odukoya & Chui,2013). IT systems in healthcare are often unsuccess-fully implemented, fail to meet expectations, or are even canceled during implementation (Huckvale et al.,2010; Cresswell et.al.,2013). The level of implementation is varying. Organizational factors such as close collaboration with the hospital's IT department are emphasized as important to facilitate the penetration of EMR's and to achieve meaningful use (Jaana, et. Al. 2016). Reported problems include errors in data entry, missing or unavailable information, workarounds (the requirement for temporary fixes that bypass problems), duplicate documentation, time-consuming work, patient mix-ups, frustration among users, and confidentiality breaches (Cresswell, et.al,2013; Harvey, et. Al.2014), (Redwood, et. al.2011; Sittig, et.al.,2014).

Many IT systems are introduced or implemented without thorough testing or follow up. However, the need for increased evaluation and quality assurance of IT in healthcare is increasingly recognized.

Literature has emphasized the strategic role played by ICT (Zardini et al., 2010) and, consequently, by e-government to improve both quality (reduction of errors and defects) and the efficiency of the national health system Italian hence the decision to analyze the "EMR" tool. This research work sought to frame what are the enabling factors that favored the EMR implementation process, in a complex context such as that of Cosenza.

Through the analysis of the literature, we tried to understand and outline the conditions that the other scholars have taken as an interpretative key to the phenomenon. The case study analyzed in this study highlighted the main organizational impacts in the implementation of a new computerized management system in the Cosenza PHS. The case study, a particularly complex healthcare structure, allowed us to validate the main enabling factors of the EMR. In particular the EMR should generate the following positive impacts in its organizational context (interview with the I.S.):

1. a reduction in the number of defects and errors and Enhance patient safety;

2. gains in terms of organizational efficiency due to faster results and less waste of re-sources (human and material)

3. faster access to access to clearer and more specific information, improve availability of data Improve reliability of data;

4. Provide a tool for documentation in the healthcare sector;

5. Make it possible to work across units;

6. Enable patient participation in the processes.

The main critical factors that could be identified by the study were:

1. the need to take into account and understand the needs of all the different organizational actors involved in the planning and development of the EMR. This factor is fundamental to ensure that the system meets the real needs of its users and that it is necessary to improve the cost-benefit ratio and the expected quality of the service.

2. the need to provide adequate staff training in the use of the new system to involve and empower staff more.

The results highlight how the adoption of the EMR within a complex health organization necessarily requires a technological infrastructure (ICT) capable of allowing the correct and adequate integration between the EMR system and the company information system in the various components both clinical and administrative.

The EMR project entails the scheduled deployment of wireless and wired networks, as well as computer equipment, including mobile devices, such as carts, laptops, tablets and PDAs. Clinical staff

has the ability to view history and supporting documentation throughout the patient care interaction, thus improving the quality and safety of care. There is reduced redundancy of work by having the ability to chart patient information efficiently through real time documentation. Also, by having immediate access to patient information, the number of injuries can be reduced, thereby improving patient safety.

After describing the results of our research, we took note of the work has some limitations that could be the starting point to improve our study.

The limitation is the number of enabling conditions identified by the literature and validated by the case study. The health context is a particularly complex context; therefore, it seems difficult to define all the factors that influence the introduction of a new technology.

If it were possible to identify new enabling factors it could lead to a greater understanding of the implementation process of the EMR.

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