

Using Dooyeweerd's Aspects to Understand Down-to-Earth Issues in Use of Medical Records

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ABSTRACT

This research is about experience of using electronic medical records (EMR). Chapter 1 introduces and justifies the main research question “How can Down To Earth issues that are important in uses of EMR be studied by using Dooyeweerd's aspects?”

Down To Earth (DTE) issues are those meaningful in daily uses of patient medical records rather than those meaningful for management, ICT suppliers and academics.

A survey of the literature (Chapter 2) reveals that high level issues rather than DTE issues are mostly discussed. Even where the literature mentions DTE issues, there is a need for three research activities

1-reveal DTE issues to bring to light those which are significant and important

2-uncover the hidden issues and the reasons for these hidden issues.

3-classify the issues to identify which of these are the most significant

After considering a range Information Systems (IS) Theories, Dooyeweerd’s aspects emerged as a suitable theoretical framework to reveal, uncover and classify DTE issues (Chapter 3). Interpretivism was the philosophical lens of choice given that it primarily seeks meaning and insights, much in keeping with this research which looks for the meaningful issues of Medical Record (MR) users and aims to gain insights into DTE issues of MR uses. So an interpretive approach is used (Chapter 4). Users of MR are interviewed and Dooyeweerd’s aspects are employed to analyse the transcripts and a selection of excerpts from papers (Chapter 5).

Using the results of aspectual analysis of these texts, five quantitative and qualitative comparisons are made of the following (Chapter.6)

- The comparison of hospitals
- The comparison of paper and electronic records.
- The comparison of nurses
- The comparison of nationalities

The research has three main findings (Chapter 7).

1-The meaningful DTE issues for medical record users are different from the meaningful issues discussed in the literature.

2-Aspectual analysis enables us to reveal, uncover and classify DTE issues that are meaningful for medical record users.

3- Each type of user tends to have a unique aspectual profile.

Chapter.8 discusses limitations of the research and how this research might contribute to practice methodology and theory. The research contributes to practice of designing and evaluating EMR systems. Furthermore the research could help to generate a theory of medical records. Also the research offers a method for analysing DTE issues for other researchers in other sectors.

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CHAPTER ONE: The Challenge of the Transition to Electronic Health

Records

1.1 Research Background

Patient records are the life blood of any health institution, be it an established national health service such as that of the UK, or a young but growing health sector such as those found developing and emerging economies. The health sector is unique insomuch as it constitutes a composite of multiple stakeholders with varying degrees of autonomy, all pushing their own agendas whilst functioning within the overall remit of their institution. This description of a healthcare institution is consistent whether one is discussing healthcare organisations in which stakeholders interact and engage with patient records via information systems, such as the NHS, or institutions reliant upon paper based records, like those commonly found in developing economies.

The author has first-hand experience of the latter, having previously served as a medical records technician in hospital in the Kingdom of Saudi Arabia (KSA), and is acquainted with electronic patient records through as a patient in the UK. It is in this capacity, as someone with experience of the health sector as a primary and secondary user of patient records, which the author intends to explore the complexities of the healthcare sector through a critical comparison of the UK and the Kingdom of Saudi Arabia.

The medical record (MR) technician starts her work in Medical Records Department(MRD) in the specialist hospital in the city this department is located at the end corridor on the hospital's first floor . The Medical Records Department runs three shifts every day including weekends. Morning duty time starts at 8 a.m. and finishes at 4:30 p.m. whilst the afternoon shift starts at 5. P.m. till 11.30 p.m. and the night shift starts at 12 a.m. till 7:30 a.m. There is 30 minutes between each shift for endorsement.

The technician starts her work by collecting the outpatient clinic lists aiming to pull out roughly between 120 up to 150 patient files from the mobilized shelf. Upon doing so, the technician places these in the trolley, before proceeding to count the number of patient files for each clinic, whilst double checking that each file number mentioned in the outpatient

clinic list corresponds with the number of patient files. The staff nurse comes to MRD to take all the patient files for her clinic, checking the files bundle for her clinic with the MR technician to be sure all the patient files are available. If there are some files not included in the bundle or in the list there is a remark providing reasons for unavailability.

The staff nurse pushes the trolley toward the outpatient clinic, where she begins to receive the patient files in the Hospital Information System one by one. This will help the MR technician track patient file location by searching for it in the Hospital Information System. Then she starts calling the patients to enter the physician room; some patients need to be admitted in the in-patient for further checking or for a specific procedure. If one patient is for admission the staff nurse will take him/her to in patient ward with the patient file. The nurse in-charge will receive both the patient and his/her file then the staff nurse will endorse the file and discuss the patient endorsement between them).

1.2 Electronic Health Records

Computerised or electronic medical records (EMR) offer much potential in simplifying such activity. Despite this, EMR are not as widely used as they could be (West & Blake, 2009) because problems emerge when they are in use, often unexpectedly. These problems are multifaceted, from taking more of the physicians' time, decreasing their rapport with patients and increasing patient anxiety (Beiter et al. 2008) to the more general issues such as impacting personal and professional privacy. Hence, support among physicians, office staff, nursing staff and patients, for the transition from paper to electronic records is not as high as EMR suppliers or health care planners might expect (Shachak et al. 2012). If the usage of EMR causes problems then health care quality might be threatened.

The health sector has recently shown concern for the sector-wide implementation of information technology (Ben-Assuli, 2015, p.287). There have been both successes and failures and opinions vary among those who use or are affected by use of EMR. For example, Beiter et al. (2008) cite a Korean study that found nurses' attitudes and perceptions as generally positive toward EMR; conversely however, a US study that surveyed nurses and office staff, discovered reduced patient privacy and confidentiality as a primary concern. Damberg et al. (2010) found little association between increased EMR use and increased performance.

Despite the U.K. National Health Service system 'Connecting for Health', which was meant to provide EMR accessible across the U.K., being abandoned (Simons, 2011) due of "chaos" (Doward, 2008) and excessive costs, many other countries aspire to implement EMR. They should perhaps be cautious and seek to understand the issues that bring success in EMR.

EMR policies, plans, designs and development are all influenced by what is discussed in the literature. If the literature does not faithfully represent the wide range of issues that are truly important to the successful use of EMR - especially those related to quality of medical care - then it is at least counterproductive to be influenced by what the literature says, and could even be dangerous. Unfortunately, though there are many discussions about EMR, its benefits and implementation, most of these are from the point of view of health organisations, EMR suppliers and academics. There are fewer published studies related to EMR usage from the point of view of those most involved in the usage of EMR - physicians, office staff, nursing staff and patients (Shachak et al. 2012; Beiter et al 2008). Furthermore, publications that address resident physicians and their perceptions related to EMR use remain few and far between. Though Protti, Bowden & Johanssen (2008) argue the importance of government action to set up infrastructure (standards, policy, etc.) within which EMR can function well, this still leaves the question open of which issues are important in this functioning. This is what motivates the present study.

There is a need to identify the issues that are important in actual use of medical records (MR) so as to guide the development of EMR. Some are to do with implementation, but many issues are to do with usage of MR once they are implemented. Not only are the usage issues many and varied, but often many issues are hidden, only coming to light after a system has come into use or partial use. Even then, these are often overlooked in studies. The reasons as to why these issues are overlooked remain varied. Often it is because the researchers or analysts are interested in only a specific set of issues. Besides, these seldom emerge in normal interviews, being either tacit (Polanyi 1967) and hence not easily explicated, or simply taken for granted. Yet others are embarrassing, politically or in other ways, and so left unspoken. Therefore, there needs to be a way of detecting such issues and assessing their importance.

Note: many use the term "health records" while others use the term "medical records". Though some argue they refer to different things, in this research the two terms are treated as

synonymous and so the acronym 'MR' will stand for 'medical records' and 'health records', whilst the acronym 'EMR' will be used for the electronic version of both.

EMR users refer to the health care provider who usually use, write in medical records inside the hospital such as physicians, nurses, medical record technician, pharmacists, laboratories, IT technician, admission officers, and any health care provider use patient medical records.

1.3 Diversity of Issues

Multiple authors have sought to outline the various issues that emerge when using EMR. As such, Standing and Cripps (2015) observe that within the context of e-health record implementation, critical success factors are not always clear as far as the actual literature is concerned. Some problems arise from the design of the EMR system whilst McDonald (1997) draws attention to hardware problems, such as interference between the EMR system and electronic equipment. Physicians and intended users have to be taught how to use these systems (Devitt & Murphy, 2004), this in itself encapsulates an additional set of challenges given that there is a general illiteracy of IT-related issues among healthcare practitioners (Altiwajiri, 2010). Using IT is thus seen as complex (Walsh, 2004).

Berg and Bowker (1996) add that stakeholder issues must be given due concern if a system is to function smoothly as a failure to do so is likely to create obstacles during implementation. Issues such as user interface, design and their appropriateness to user needs are therefore crucial and must be heeded. There are financial barriers to the use of EMR (Miller & Sim 2004; Dick & Steen 1991). There are also important legal and ethical issues that need addressing (Davis & Konikoff, 1998). Sociological perspectives in medical records research have not been sufficiently recognised (Berg & Bowker 1996)

Some practitioners prefer a narrative form with free text rather than the traditional pre-set fields, and perhaps photographs (Pallav 2006), because "every patient tells a story" (Walsh 2004). However, there are technical challenges to this (Pallav 2006; Altiwajiri 2010). Another sub-set of problems concerns the attitude and belief of physicians to usage and eventual acceptance of EMR (Ilie, Courtney & Slyke 2007; Altiwajiri 2010). As such, physicians have been known to reject new IT systems; this reaction is not limited to physicians but also includes nurses, (Timmons 2003). Timmons (2003) finds that user

resistance relates to both the implementation and use of computer systems, and to both the ideas and the ways of working of such systems. Additionally, 'Learning to type' is not just a matter of training, but also an issue of self-belief and vision for one's work. Physicians argue that 'learning to type' is not what they are trained to do. In addition to all these, a multitude of religious-related issues affects the usage of EMR. (Altiwajiri 2010).

There is large diversity of issues and these seem to be grouped into two levels.

1. There are high level or abstract issues of interest to management, academics and ICT suppliers.
2. There are lower level issues of interest to daily users of health records.

The latter are referred to by Ahmad and Basden, (2013) as “Down to earth issues.” They are important because they affect the quality of use of medical records. Therefore it is important to disclose them and take them into account when trying to understand the uses of EMR and in the transition from paper to electronic records.

1.4 Down To Earth issues in the literature

Most papers and articles discuss high-level issues, but only a minority of articles mention Down To Earth issues. The majority of the articles discuss EMR uses from the perspective of academics, management or ICT suppliers. Most of the articles that mention Down To Earth issues only do so in order to illustrate high-level issues. Moreover where Down To Earth issues are mentioned, they are seldom studied systematically. They are seldom classified. This is discussed at the end of the Literature Review.

1.5 Dooyeweerd's aspects

Dooyeweerd's (1955) set of aspects is used for this, because he started from the everyday attitude of thought. In this attitude we experience diversity of meaning, which may be seen as aspects of things. Dooyeweerd suggested that there are, at least, fifteen diversified aspects, or ways of being meaningful, which one can utilize to look at reality; a more comprehensive list of these aspects is provided by Table 1 in Chapter three .

Dooyeweerd's aspects allow us to reveal Down To Earth issues, uncover those that may be hidden, and compare the discussion of issues in the literature with what users of EMR find meaningful. The significance of these aspects herein lies their ability to disclose a great deal

of information about how entities fit within the context of everyday reality, as we experience it. Maslow's hierarchy may seem similar to aspects however it covers fewer aspects and in more limited ways.

Ahmad and Basden, (2013) used Dooyeweerd's aspects to reveal Down To Earth issues. Therefore, it is worth exploring the uses of these aspects to study Down To Earth issues in EMR uses.

1.6 The Main Research Question

The motivation behind this research is that many 'down-to-earth' issues of the use of electronic medical records (EMR) – which impact the whole delivery of health care beneficially or detrimentally – tend to be overlooked by managers, ICT vendors and academics. As health providers throughout the world learn from Western experience of installing EMR, it is important to understand the various down-to-earth issues that might be encountered. Therefore, this research comes to answer following question:

“How can Down To Earth issues that are important in uses of EMR be studied by using Dooyeweerd's aspects?”

1.7 Research aim and Objectives

This study aims to find a way to investigate 'down-to-earth' issues (Ahmad & Basden 2013) - those scattered, hidden and tacitly known issues that actually make a difference to health care 'on the ground'. With this in mind, the following research objectives have been identified:

1. To identify the requirement for studying meaningful Issues in EMR uses. The requirement for this was identified as three research needs to reveal, uncover and classify Down To Earth issues. Evidence of this can be found at the end of the literature review in chapter two.
2. To establish a conceptual framework for the research. (Dooyeweerd's aspects)
3. To disclose issues that are meaningful for EMR uses by using the conceptual framework. This is an aspectual analysis method.
4. To study the disclosed meaningful issues in several cohorts in EMR uses.
5. To reflect on how well Dooyeweerd's aspects can provide a good understanding in the use of medical records.

1.8 How the Researcher's Experience Enrich this Research?

The researcher has five years' experience as a medical record technician in a specialist hospital in Saudi Arabia. Upon moving to the UK and following a period of hospitalisation, the researcher experienced what it felt like to be on the patient side of the healthcare sector. This in turn enriched her experience in the same way that being a medical record user did whilst in KSA. As a result, the researcher's experience has been used to benefit this research in the following ways:

1. Benefit while reading literature. The researcher's background helped her to identify EMR issues in the literature, and to explore the similarity between the existing issues in the literature and daily uses of EMR. It was obvious, by comparing the issues in the literature and daily uses, most of the literature discussed high level issues e.g. policy, EMR investments, technical issues etc. The researcher's background also helped to bring to light the issues in daily uses that are not mentioned in the literature.

2. Benefit while interviewing. The researcher's background knowledge made the interview more efficient e.g. when the name of wards, role of healthcare provider or forms has mentioned, she knew what the terms meant. She was also aware of their implications e.g. the different responsibility of resident and consultant. Moreover, she knew what the abbreviations meant e.g. OR, CT-scan, ICU, CCU and etc. Her background knowledge helped to formulate the meaningful questions in response to what the interviewee said.

3. Benefit while analysing the data. When the interviewee finds it difficult to explain the researcher could understand what they were intending to say because of her background knowledge. She also knew the implications of what was being expressed e.g. she knew the vital signs sheet for ICU is more complicated than the vital sign sheet for Gynaecology or other specialism. In addition to this, the researcher was aware of the fact that ICU work tends to be more intensive and overloaded in comparison to other departments so they had different attitude and different pride in their work. This prior knowledge and insight provided the researcher with a sound foundation upon which later understanding. . Furthermore, this background knowledge helped her to identify aspects more precisely. *e.g. "Here in the ICU I have 24 patients staying in the hospital for two weeks or more; they stay for long time. I follow up the entry of the new patient and make sure of it. Also, I make sure there are the same papers as in ER, admission. In addition, I make sure of the ID and make sure that all this information is in the patient's file."*

However, the researcher was careful in ensuring that her experience minimally distorted the interpretation. This is discussed further in Chapter 8.

1.9 How the Saudi Arabian Context Enriches this Research?

The empirical work of this study was undertaken in Saudi Arabia, though the research makes no attempt to compare the respective healthcare sectors in Saudi Arabia and the UK. The current situation in Saudi Arabia is used purely to provide empirical data for more general study. This has three advantages:

- The interviews in Saudi Arabia are likely to raise issues that are not discussed in the literature. Most of the literature is influenced by Western assumptions. There are very few papers that discuss Down To Earth of EMR use in Saudi Arabia let alone neighbouring Gulf States e.g. Ramadan and Hajj has a large impact on healthcare system. Therefore this study is likely to widen the range of issues discussed in the literature. Many such issues are taken for granted or hidden, thus they are overlooked in the literature.
- Since the researcher is from Saudi Arabia, her experience will be more useful during the interview and analysis as discussed above.

Even though the findings might be general, the researcher wishes that her research might also contribute to improving Saudi healthcare. Some specific results might be directly useful in Saudi Arabia.

Saudi Arabia is counted amongst countries which are still in the midst of development, though despite this, it attempts to cope with global health advancements in order to provide better services to their citizens (Aldajani, 2012). In Saudi Arabia, there are 224 hospitals, 60% of which are public hospitals managed by the Ministry of Health (Alkraihi et al., 2013). Healthcare services are delivered free to all Saudi citizens (Alanazy, 2006). An integrated EMR system was firstly introduced to Saudi hospitals in the 1980s, and its expansion, in public hospitals, is described as slow. Different reasons affect the level of EMR successful usage (Alsahafi, 2012). Although there are problems limiting the rollout and usage of EMR across the country, the Ministry of Health has noticed the significance of adopting an integrated information system to provide better services (Alsahafi, 2012). Due to context of

the study, this research takes a new perspective, seeking out the 'down-to-earth' issues (Ahmad & Basden, 2013), that actually make a difference to health care 'on the ground', and help to reach effective usage of EMR.

1.10 The structure of thesis

Chapter two reviews literature in EMR in order to identify the requirements for studying Down To Earth in EMR uses.

Chapter three examines Information System Theories and, outlines Dooyeweerd's aspects in order to establish a conceptual framework for the research.

Chapter four discuss the research method.

Chapter five introduces the results from aspectual interpretation of the interviews.

Chapter six presents the results of an aspectual analysis of interviews with EMR uses.

Chapter seven presents the methodology of this research.

Chapter eight presents the conclusion of this research.

CHAPTER TWO: Literature Review Electronic Medical Record

2.1 Introduction

This chapter explores the literature review of medical records, both electronic and paper based.

Moreover, the chapter shall discuss the existing high-level issues which have been cited in the overarching literature as the following:

- Section 2.2 introduces the concept of EMR and terms relating to medical records which have been used in this research.
- Section 2.3 discusses scholarly definitions of EMR.
- Section 2.4 explores the existing high-level issues that have been mentioned in the literature such as costs, acceptance etc.
- Section 2.5 discusses the lower level issues which are referred to in the nineteen articles centred on meaningful issues. A reflection on these articles/literature is also presented.
- Section 2.6 presents the conclusions for this chapter.

2.2 Introducing the Concept of Electronic Medical Records

This section shall predominantly discuss medical records in order to introduce what medical records mean, in terms of its definition and the application of said records so as to successfully present the topic to the reader. The section shall further go on to discuss medical records in general, covering the following:

- 2.2.1 Consists of a table of the terms that have been mentioned within the literature and research domain, including and alluding to, EMR.
- 2.2.2 Outlines an overview of how medical records are used and EMR technology.
- 2.2.3 A Review of the respective definitions.

2.2.1 Terms used in this thesis

The following terms are used by the scholarly domain when discussing electronic and paper based records. Table 1-1 outlines the definition of each term as well as linking said terms to the relevant literature in which they have been used.

Term	Definition	Articles that use this term
EMR	Electronic Medical Records	Physicians: use of EMR barriers and solutions, by Robert H. Miller and Ida Sim, (2004); Communicating about medications during primary care outpatient visits: the role of electronic medical records. Inform Prim Care (2005), by Arar NH, Wen L, McGrath J, Steinbach R, Pugh JA; Preventing Medication Errors in Hospitals through a Systems Approach and Tech Jacquelyn Crane; Frederick G Crane. Hospital Topics Fall 2006; Interdisciplinary collaboration and the electronic medical record Paediatric Nursing by Green, S., & Thomas, J. 2008. Do electronic medical record (EMR) demonstrations change attitudes, knowledge, skills or needs? By Beiter et al., 2008. Adoption of information technology in primary care physician offices in New Zealand and Denmark, part 3: medical record environment comparisons by Protti et al. 2008. The electronic medical record: pros and cons by Maria Luisa Ventura, 2011. End-user support for a primary care electronic medical record: a qualitative case study of a vendors perspective by Shachak et al. 2012.
HIS	Health Information System	Antecedents of the People and Organizational Aspects of Medical Informatics: Review of the Literature by Lorenzi, et al, 1997. The Nursing Informatics Workforce: Who Are They and What Do They Do? By Murphy 2010. To Decay is System: The Challenges of Keeping a Health Information System Alive by Wetter, 2006, What does it take to replace an old functioning information system with a new one? A case study by Kyhlback & Sutter (2006), How are health professionals using health information exchange systems? Measuring usage for evaluation and system by Vest, & Jaspersen 2012
EHR	Electronic Health Records	Adoption of information technology in primary care physician offices in New Zealand and Denmark, part 3: medical record environment comparisons by Protti et al. 2008. Problem list completeness in EHR, Multisite study and assessment of success factors by Wright, McCoy, Hickman, Hilaire, Borbolla and Bowes (2015)
EPR	Electronic Patient Records	Ethnographic Study of ICT - Supported Collaborative Work Routines in General Practice by Swinglehurst et al 2010
MR	Medical Records	By the researcher

Table 1-1: Terms that have been used in this research and the research domain

Terms overlap even though the authors use different terms loosely. Electronic medical records refer to the electronic copy of paper records. This term is usually used for medical records while hospital information system(s) refers to the system used in hospitals; usually

integrated and monitored by an IT department with users having access to log on the server. Electronic health records refer to patient records, usually of concern to physicians and nurses. Medical records refers to patient records, either paper or electronic, which are used in all hospitals.

This research utilises two terms: "medical records" (MR) and "electronic medical records" (EMR), acting as umbrella terms to consolidate the respective terms listed above.

2.2.2 EMR System and Technology Outline

Patient medical records are used by a number of professionals within healthcare users of different types. Each user has a role in relation to MR, whether the records are paper or electronic, which are as follows:

- Administrative users, such as admission officers and receptionists. Usually these users are responsible for entering general patient information such as names, date of birth etc.
- Technicians such as medical record technicians and IT technicians. Usually, medical record technicians are responsible for issues such as release and return of patient records to the medical records department. Furthermore, IT technicians are responsible for technical issues regarding the hospital system and EMR.
- Medical users such as physicians and nurses; obviously their responsibility is related to patient health issues. In addition there are Para -medical users, such as physiotherapists who are concerned about whether patients need physiotherapy and pharmacists, who usually have responsibilities regarding patient medication.
- PMR and EMR refer to paper medical records and electronic medical records, respectively. Both types of record keeping usually contain:
- Administrative information related to patients such as patient name(s), gender, date of birth, contact details, next of kin, etc.
- Medical information, which relates to all information regarding patient health such as medical history, procedure(s), medication(s), admission, discharge, follow up appointments, etc.
- Physicians and nurses' information, which includes the correspondence between nurses and physicians, including the recommendations, consultation, and endorsements between nurses to follow up on patient status.

- Paper medical records are kept in the medical records department and sent to clinics during patient visits to hospital, for appointment or for admission. These paper records are then returned to the medical records department by nurses, in that respect there are number of users who handle paper records and are able to view the documents without restriction, not to mention the fact that often, issuing paper records takes a long time. From this it can be inferred that there is a need for electronic medical records. From the researcher's experience EMR includes the same information (administrative and medical information) that is contained in paper medical records, but the number of users who have right of access to the EMR in order to view the documents is limited to those with specific user access. EMR would also save users time, in terms of retrieving patient information from the hospital system(s). Therefore there are many different health care system providers that offer to design EMR for hospitals such as:
 - Oracle Company which is a firm based in Jordan. If the designers are located in Jordan then complications can arise for Saudi hospitals to hire or meet the suppliers if problems occur in their respective system.
 - General Electric (GE) is an American multinational conglomerate incorporated in New York that provides global research, healthcare, medical devices.
 - DrChrono is a global medical platform for physicians and patients which provides online EMR, including smart device access.

Some health care system providers notice the high demand for EMR and thus EMR companies develop different EMR systems. Usually, EMR system companies that cause the problems that usually face the users have designed EMR. Some of these problems are related to issues such as resistance to the use EMR, access, and shutdown, required fields for some specialties, computer literacy and so forth.

2.2.3 A Definitive Review of Medical Records

This section mainly discusses EMR definitions to introduce what medical records mean for the reader. The remainder of the literature review discusses medical records in general.

The reasoning behind presenting a discussion of definitions is not to present a new definition, but to define the varieties of issues in order to illustrate how the literature differs from real world experience with MR. This review considers six common definitions of medical records (MR) of various types and critically evaluates their importance to inform the use of MR, especially EMR.

Usually, people's intuition regarding MR covers three things: patients, hospitals and physicians. However health care givers have different perspectives regarding patient records, which depends on their experience(s) or their roles in health care organisations. Administrative users are usually of the opinion that patient records are all about patient information with the assumption that nurses and physicians have full responsibilities for patient records. In tandem, physicians think nurses must deal with everything regarding patient records whilst nurses think that the onus is upon physicians. This can result in nurses feeling overworked and overloaded with especially in terms of patient records. Therefore, the researcher cannot find any specific definition that can describe the real life element of patient records so each definition reflects the authors' thoughts on patient records. In addition, each definition includes different concepts and so it becomes difficult to arrive at a clear-cut definition for EMR.

As already established. There are many definitions of EMR. Some of these definitions describe the users role of EMR as can be seen in Definition.1; or they might describe the type of documents included in the EMR as Definition.2 ;or they might describe patient status, treatment or medication as we can see in Definition.3; or who makes and reviews medical records, as well as various types of medical data that need to be recorded as can be seen in Definition.4; and finally Definition 5 covers most of the areas of MR use. Unlike the others, it highlights the confidentiality issue of medical records and the need of certain authorities who are in the position to access specific patients' records.

Therefore, this research has chosen five definitions to demonstrate the differences in thought between scholars in the field and real life EMR usage.

Definition 1:

Huffman (1981) defines a medical record as “a file that states the who, what, why, where, when and how services are acquired by a patient during treatment or undergo treatment”.

This definition, through its sequential inquiry, encourages readers to think about different dimensions of MR and gives them the opportunity to answer these inquiries according to their own experiences. For example, each individual according to his/her life experience, can have different opinions about the content of MR file. However, this definition is not clear enough to thoroughly cover MR use, especially when it comes to Down to Earth issues. For example, there are no details about who does the recording and neither are the guidelines regarding access and specifically, authority to access, established. Roles govern the recording process, the types of data that need to be recorded and other important issues. Said issues need to be addressed when discussing MR use.

Definition 2:

Regulation of health minister in Saudi Arabia 749a/ regulation of health minister Per/XII/1989: “Medical Record is a file that contains records and documents about the identity of patients, the results of the examination, treatment, action and other services received by patients in health facilities both outpatient and inpatient.”

This definition comes to cover the issue of the contents of MR, which are missing in Definition 1. It is prudent to note that there are two types of patient documents: administrative and clinical. This particular definition limits administrative documents to patients' identity and generally refers to clinical document(s) content. From the researcher's experience, both of these documents are necessary to be included in MR since effective medical services require a continuous process of documentation relating to patients' medical conditions. Moreover, this definition does not address other key issues of MR such as recording procedures, users of MR, responsibilities etc.

Definition 3:

"A chronological written account of a patient's examination and treatment that includes the patient's medical history and complaints, the physicians physical findings, the results of

diagnostic tests and procedures, and medications and therapeutic procedures." (The American Heritage Medical Dictionary, 2007 pp 326).

This definition highlights the significant issue of arranging medical documents chronologically. For example, nurses on early morning shifts can endorse patient condition to the nurses working the afternoon shift, and so forth. This is a necessary point as understanding patients' condition and providing appropriate treatment needs accurate details of previous events. Nevertheless, this definition limits MR content to clinical documents only, which are medical history; complaints; findings; examinations results etc. Furthermore, there are other details that need to be established in the medical record. For example, patient management issues involving dates of entry and discharge; number of days in hospital; name of related physician; and discharge summary should be established and recorded. Besides, there is a need to mention patient information associated with identity, address, religion, occupation, gender and next of kin. In addition, there is other information to be considered such as concluding discussions relating to medical patient condition with the and with their respective relatives.

Definition 4:

"That part of a client's health record that is made by physicians and is a written or transcribed history of various illnesses or injuries requiring medical care, inoculations, allergies, treatments, prognosis, and frequently health information about parents, siblings, occupation, and military service. The record may be reviewed by a physician in diagnosing the condition." (Mosby's Medical Dictionary, 2009a, p.1109.)

This definition raises two serious issues associated with MR use: firstly, who makes and reviews medical records and second, the different types of medical data that need to be recorded. This data should cover both clinical and administrative data of patients. However, this definition ignores other medical users, who usually create and utilise medical records such as nurses, pharmacologists, lab technicians, radiologists, psychiatric staff, and physiotherapists. There are also more issues of significance in terms of MR that have not been pointed out here like for instance, chronological arrangement of MR and patient management issues.

Definition 5:

"A collection of documents that provides an account of each episode in which a patient visited or sought treatment received care or a referral for care from a health care facility, the record is confidential and is usually held by the facility and the information in it is released only to the patient or with the patient's permission". It contains the initial assessment of the patient's health status, the health history, laboratory and radiologic reports of tests performed notes by nurses and physicians regarding the daily condition of the patient and notes by consultants as well as order sheets, medication sheets, admission records, discharge summaries, and other pertinent data. A problem oriented medical record also contains a master problem list. The patient record is often a collection of papers held in a folder, but it may be computerized. Also called "chart" (Mosby's Medical Dictionary, 2009b)

The final definition above covers most of the areas of MR use. Unlike the others, it highlights issues associated with medical records and confidentiality, as well as the need for authorised access of specific patient's records. Medical records have limited access governed by the acquisition of patient permission and consequently, each user should access a specific part of these records according to his/her speciality. The manner in which saving patient files through holding them in a folder or by electronic means represents another serious issue of the MR concept. In addition, this definition clearly specifies different types of patient documents, which include both clinical and administrative documents.

According to the researchers' own experience, patient records could be released to different parties. First, it could be released to the patient or a person acting on his/her behalf. Secondly, other health-care providers can have an access to medical records in order to provide help/aid to the patient. Authorised parties, who have a high level access as permitted by the country, can also access patient's records such as management departments, courts, and quality assurance companies. Different levels of authority of access and the ability to modify patient records are necessary to guarantee maintaining effective MR. For instance, consultants can access, write or add recommendations inside nurse's notes but not conversely. When considering the above, this definition seems to be more detailed than other previous definitions, especially in terms of covering the MR concept.

After critically reviewing these perspectives or rather, prospective definitions, it seems there is no one single definition which covers the diversity of issues as found in the researcher's experience. For example, the first definition (Definition 1) considers MR as a broad concept but it does not provide any informative details. Other definitions offer limited views about various aspects of MR such as content associated with MR, types of MR documents, patient management issues; while they ignore making mention of other important issues relating to MR such as recording procedure, users of MR, responsibilities, authorities/authorisation and so forth.

The above discussion has presented characteristics of MR instead of developing yet another definition. This is due to the fact that even though the final definition (Definition 5) has introduced more detail than others, it still does not cover all the various issues of MR. To do so by just adding issues to definitions makes them unwieldy. In that respect, the author suggests that another route of thought should be taken when examining how the literature deals with said issues and/or factors in regards to MR.

2.3 Electronic and Paper Records

This section provides a brief overview of the advantages and disadvantages of EMR compared with paper or hard-copy records, so as to present a background into these conceptual applications. The point being discussed in this thesis is not which is better; but what issues are important in the use of medical records, especially that of EMR.

, In light of this, there is a need to find a way to address the issues and factors that affect use of MR and EMR in particular.

2.3.1 Advantages of EMR

Paper medical records are often incomplete, out of date, illegible or difficult to read, leaving clinicians without crucial information when trying to make decisions on treatment protocols and medication(s) (Bliemel and Hassanein, 2004). In contrast, electronic medical records (EMR) have many apparent advantages. Danielle (2010) suggests that electronic medical records promise more efficient work, as well as being safer (Fetter, 2009) and more productive. EMR can improve the offered care - its quality and coherence - and facilitate

guidelines and care pathways, making it easier in assisting the management of clinical research and its outcomes. EMR can also solve record movement issues (McDonald, 1997).

Furthermore, computerised records enhance physician order entry, hence preventing serious medication errors (Mukherjee and McGinnis, 2007), which may be critical for example, when a patient is allergic to certain medication(s). Additionally, duplication of patient records can be reduced. EMR can be available to all clinicians that are involved in the treatment pathway, resulting in significant time-saving, as there is no need for other venues to wait for hard copies. Therefore, Arar et al. (2005) recognise that EMR benefits are wide and varied, including cost reduction, decreasing administrative complexity, increasing safety benefits and improving communication between patients and providers, with subsequent focus on patient-centeredness.

Overall, there is an increase of use of information technology, which is used to improve continuity and quality of services (Paré et al 2014. p.548).

2.3.2 Disadvantages of EMR

Though the literature has focused more on the advantages of EMR, some scholars within the research domain have outlined disadvantages of several different kinds. Some of them arise from the design of the EMR system. McDonald (1997) draws attention to hardware problems, such as interference between the EMR system and electronic equipment. Berg (1997) raises the 'rush hour' problem, where many information sources exchanging procedures at peak times cause "important obstacles to the network's smooth functioning".

Often there is lack of standardisation between systems, which represents another class of disadvantages. Mostly, the user interface is of a design that does not match the users' needs or the way they work. Traditionally, filling pre-set fields enters information but Pallav (2006) mentions that some doctors, especially some psychiatric practitioners, prefer a narrative format in which the health care giver is offered a blank area where they can write sentences. As Walsh (2004) explains, "every patient tells a story..." and "the patient is seen as a page from the book of nature and a text to be read and the doctor becomes the author of stories within the medical record". Furthermore, photographs are important in medical records. However, as Pallav (2006), points out, narrative style might make design and implementation

of EMR more difficult, both in specific data of patients and the structure of the data in the system. Standardisation of not just format but also of the exact meaning of pieces of information becomes a challenge (Altiwajiri, 2010).

The individual user requires different levels of IT literacy to use EMR effectively, which can be seen as another type of system disadvantage. A major limitation is IT skills, due to the fact that using IT is seen as complex (Walsh, 2004). Devitt and Murphy (2004) state that doctors need to be taught, or to have, information skills, and Altiwajiri (2010) confirms that there is a general illiteracy of IT-related issues among health care professionals. This need is not exclusive to databases but to several health informatics topics, which many doctors did not identify for training purposes. In addition, Dick and Steen (1991 cited by Berg, 1997) draw attention to costs, with Miller and Sim (2004) arguing that financial barriers influence implementing successful EMR.

Another group of problems concerns attitude and beliefs. Ilie et al. (2007) analyse the reaction of physicians to usage, and eventual acceptance of EMR. Altiwajiri (2010) also shares this point in Saudi Arabia, where his research was conducted. For many reasons, some physicians refused using the IT system. Timmons (2003) notes this reaction is not limited to physicians but also includes nurses. He finds that resistance is to both the implementation and use of computer systems, as well as resistance toward both the ideas and the ways of working with such systems and cites Dowling as giving the following types, or forms, of resistance: passive resistance (non-cooperation); oral defamation; data sabotage; and refusal to use. Pallav (2006) claims that "Many EMR system are rejected by clinicians because they are not based on a story metaphor". While Berg (1997) suggests that physicians need to be made part of the EMR in order to overcome their "learning to type" objections. Learning to type is not just a matter of training but also an issue of self-belief and vision for one's work. Physicians argue that 'learning to type' is not what they are trained to do.

Concerns have also been raised following health information technology such as privacy and legal issues (Ben-Assuli, 2015).

2.3.3 EMR in Western and Non Western contexts

The actual level of EMR adoption and use tends to differ not only on a local level from hospital to hospital as differences also arise on a macro, national level from country to

country, depending on the extent to which a region is developed/developing (Deutsch et al., 2010; Protti et al., 2007; Fonkych and Taylor, 2005; and Simon et al., 2008). This “digital divide” is referred to as the gap in access to information available online and by electronic means such as EMR system. This gap is attributed to specific difficulties that social entities and countries experience once they adopt and implement EMR systems.

Social entities, in this context, are people who have limited income, low levels of literacy and education, in addition to being more senior (Kreps, 2002). People who have limited income (less than \$15000) face the problem of accessing health information by the technology itself (Eng et al., 1998). This issue can affect both staff and patients, where they need to access health information from anywhere as EMR is designed to enable ubiquity. Here, the role of governments centres on improving the infrastructure and ensuring access to EMR system is available online and reasonably cheap to their citizens. Moreover, literacy and education levels affect the ability of the physicians (users) to read available information by the innovation and deal with its features effectively (Mason, 1986), and this issue is directly related to the EMR resistance problem that outlined in the previous section. Training courses can improve the level of education and skills of users to access health information systems (Wagner, 2005). Besides, system designers should consider the users who have different literacy and education levels when designing the system in order to overcome lack of standardization issue of EMR systems.

The digital divide between developed and developing countries is attributed to specific reasons. Most importantly, developed countries, such as the USA, UK and Australia, have developed health and ICT infrastructure which support the adoption of EMR systems (Mbarika, 2001; Suh, 2006). Besides, available funding for EMR projects is significant in these countries. Developing countries suffer from weak infrastructure and limited funding for information technology investments (Bra et al., 2004). Given that high salaries are offered in developed countries, many of skilled workforces who work in developing countries migrate to their developed counterparts. This creates an unbalanced pool of skilled workforce between developing and developed countries, thus affecting the level of EMR adoption in developing countries negatively (Sood et al., 2008). Further, developed countries offer advanced technological training courses, e.g. 3D simulations, virtual reality and robotics, to their clinicians at tertiary levels (Sood et al., 2008). This positively reflects on their

capabilities and familiarities with EMR systems (Mugo and Nzuki, 2014). Many, physicians and nurses still have no appropriate level of computer literacy to use EMR systems effectively (World Health Organization, 2006).

Another issue is related to the culture of countries, where developing countries adopt EMR systems that present information mostly in the English language. Hence, developing countries' physicians and clinicians may have language obstacles to receive knowledge and adopt systems designed for people from a different language and culture (Katzenstein, and Chrispin, 2005).

Making an EMR implementation decision requires various types of changes within the whole organization such as changes with the structure, staff roles, procedures, and even patients' care services. Therefore, there should be clear procedures and guidelines for EMR implementation, which can be found more in western countries as opposed to non-western countries. This issue contributes considerably to the gap between developed and developing countries in terms of reaching effective EMR implementation.

2.3.4 Overview

According to the literature, there are several advantages of EMR, all of which promise to deliver positive changes to medical organisations, if effective implementation is achieved. These include cost reduction, decreasing administrative procedures, reducing duplication errors, increasing safety and improving communication between patients and providers, with subsequent patient-centeredness (Arar et al., 2005). On the other hand, several disadvantages of EMR require serious consideration in order to reach successful implementation. Examples of significant disadvantages of EMR are lack of standardization of system design, user resistance to the idea of EMR systems and its usage as well.

The last part of this section discussed differences between western and non-western countries in terms of implementing EMR systems. It is found that these differences are attributed to specific difficulties that social entities and countries have when they adopt and implement EMR systems. Finally, achieving EMR implementation requires clear procedures and guidelines, which are defined more in developed countries than developing countries.

2.4 The higher level issues

This section discusses the wide ranging issues to be taken into consideration in use of medical records. The intention of this section is not to provide comprehensive coverage of issues, rather to show the types of issues that tend to be discussed in the literature.

2.4.1. Cost of EMR

As other information systems adoption, some researchers argue that there are financial barriers as far as the use and adoption of EMR are concerned (Bates et al., 2003; Miller and Sim, 2004; Sood et al., 2008). These barriers are mainly identified as initial implementation costs and constant maintenance requirements (Bates et al., 2003). Twenty years ago, Renner (1996) estimated that financial costs and benefits of implementing EMR had a net present value of \$279,670. It is recommended that costs of implementing EMR should be shared between all stakeholders (National Research Council, 1997). However, Kokkonen, et al., (2013, p.36) noted that the very costs of EMR and the associated maintenance costs are likely to deter 'solo' practitioners who are likely to find these costs overwhelming. The financial commitment and perceived burden may be lower amongst those who are employed by larger organisations or those part of a group practice.

Due to the lack of data regarding the issue of cost-effectiveness of adopting EMR, financial barriers are still seen as one of major obstacles for adopting EMR. On the other hand, EMR can also reduce costs for medical institutions such as the costs of "chart pulls", paper use, and dictation (Hazlehurst et al., 2005; Bates et al., 2003). Besides, networked EMR can reduce time consumption for reaching required patient's data by the availability of it 24/7 at anytime and anywhere (Janusz and Grzegorz, 2003). Moreover, electronic features of EMR can help decision makers save money through analysing sorted data and identifying least expensive drugs within specific classes and assist with decision making relating to the purchase of cost-effective medicines (Bates et al., 2003). Other potential benefits of using EMR outweigh its costs. Consequently, it is still demanded in health sector (Shekelle et al., 2006).

Adopting an EMR system has many advantages for family physician practices including reducing the cost required to manage information in a clinic as well as enhancing the professional work carried out by the staff. Although some clinics have adopted the system, the knowledge and economic barriers against investing on such a system persist (Paré et al., 2014, p. 555).

2.4.2. Acceptance and resistance of EMR

User resistance is an ever present factor when examining the literature on IT systems, their adoption and associated challenges. Timmons (2003) notes this reaction is not limited to physicians but also includes nurses. He finds that resistance relates to the implementation and use of computer systems, and to both ideas and the ways of working of such systems. As such, Timmons (2003) goes on to and cite Dowling as giving the following types, or forms, of resistance: passive resistance (non-cooperation), oral defamation, data sabotage and refusal to use. Pallav (2006) claims, "many EMR system are rejected by clinicians because they are not based on a story metaphor". Further, Bates et al. (2003) noted that physicians resist using EMR primarily due to perceived workflow disruptions as data entry was viewed as being more time consuming in comparison to conventional paper records.

Interestingly, the likes of Hazelhurst et al. and Shah et al. (2014) implore users to consider the benefit of EMR of offering quick and easy data recall and past activities records which increases their work efficiency and decreases their efforts (Hazelhurst et al., 2005; Shah et al., 2014). Though learning how to use EMR can take considerable time through training physicians and practical usage, using well-developed interface and increasing familiarity with computer systems have diminished the impact of this factor significantly.

Interestingly, Qiao, Asan and Montague, (2015, p.360) found that patients generally held positive attitudes towards electronic health records usage in primary care. The findings showed that it is essential that health care providers are trained more on health informatics. Further, the study brought to light an understanding of how trust is created when people interact with health technology.

2.4.3. Confidentiality and security

Data safety remains a significant concern around the implementation of EMR (American Academy of Paediatrics, 1999). Organisations are more concerned about the privacy of their patients because they are committed to ethical and privacy codes of their society (McAlearney, et. al., 2005). Physicians appear unconcerned about this issue, for example they leave their computers open to others without considering the risk of this action (McAlearney, et. al., 2005). Transforming patient's data from the papers to electronic form, by related

nurses, can lead to a confidentiality breach where they have a full control over the access on both forms of data (Kyhback and Sutter, 2007). There are other security concerns related to networks, viruses, and ethical compliance.

Nevertheless, Bates et al. (1999) found that EMR can enhance the safety of patients' data by decreasing the possibility of making errors by 80%. For the latter authors, electronic health records hold the potential to assist with public health surveillance matters; this is likely to be of significance during emergencies including disease outbreaks/epidemics as well as bioterrorism. (Bates et al., 2003, p.4). Additionally, safe sharing of EMR information between physicians can facilitate coordinated patient care and then reduce errors, unneeded tests, wrong medical transcriptions and additional related costs (Bates et al., 2003). Therefore, in order to control and limit the impact of this challenge, basic technologies and security measures are widely available these days (Olson, 1998). For example, using user names and passwords to control and limit the access into the EMR data is widely used (Fraser et al., 2005). Encrypting stored data offers a higher level of security (Fraser et al., 2005). Most importantly, there should be training courses and workshops conducted mainly by IT departments to raise the awareness and improve the skills of physicians and nurses about how to overcome this challenge effectively (McAlearney, et. al., 2005). Overall, security and confidentiality of patient data is seen as an obstacle towards adopting EMR, however by implementing effective security measures and conducting successful training courses medical staff can limit the impact of this issue enormously.

Qiao, Asan and Montague (2015) specifically examined patient trust within the context of EHRs using a close-ended questionnaire. Using quantitative methods, more specifically a bivariate logistic regression, and the authors found that patient's trust of EHRs was shaped by three main factors. The first of which related to the degree of trust the patient *had* in their physician; the second factor related to a physician's *perceived* technical competency whilst the third concerned a patient's own perception of EHRs and associated characteristics.

2.4.4. Technical and strategic issues

Technical issues are related to four dimensions: application, used devices, user's technical skills, and available infrastructure (McAlearney, et. al., 2005). The complexity of application design of EMR can cause usability difficulties (Miller and Sim, 2004). This is because EMR

design may have multiple screens, options and unclear navigational means. This usually leads users to spend more time to document patients' notes, which impacts the quality of EMR usage negatively (Miller and Sim, 2004). Fraser et al. (2005) and Daigrepoint and McGrath (2011) indicate the importance of involving users when designing and testing EMR systems to avoid users' problems. Users can use different devices to interact with the system through various types of user interface (Rose et al., 2005). Therefore, system should include interfaces compatible with different user devices such as PCs, PDA, and phones (Fraser et al., 2005). Otherwise, users will encounter problems and even make costly mistakes that usually slow physicians' work and place patients under risk (Brisset, et al., 2004; Koppel et al., 2005).

Physicians who have limited technical skills will be unable to deal with EMR systems effectively. This is related to their technical literacy and education level, both of which impact their ability to read presented data and interact with the system (Mason, 1986). Therefore, appropriate training courses to familiarise physicians with the system and improve their literacy levels are required. In addition, the absence of appropriate technical staff can cause implementation difficulties (Fraser et al., 2005), where their support is needed to solve initial and post-implementation problems and guide physicians towards best EMR usage.

Furthermore, available infrastructure and depended devices should be compatible with the requirements of EMR implementation, so implementing EMR systems can lead to IT infrastructure upgrade in related institutions (Daigrepoint and McGrath, 2011). This is further enforced by Daigrepoint and McGrath, (2011, p.17) who assert that reliable IT infrastructure encompasses reliable networks, suitable hardware for end-users in addition to effective help-desk support. In addition, appropriate data exchange, between EMR system and existing clinical systems, is essential to the effectiveness of EMR usage (Miller and Sim, 2004). For example, physicians will resist EMR when they need to access a given patient's lab results manually from a different information system (Miller and Sim, 2004). Moreover, lack of data exchange by EMR systems can affect the corroboration with external parties, such as other medical institutions. The participation of other institutions remains essential to providing enhanced care services (Miller and Sim, 2004).

Consequently, investing in EMR systems is seen as a strategic decision that includes infrastructure upgrade to ensure the success of EMR adoption (Mcalearney, et. al., 2005).

Hence, organisations should be clear about EMR goal in order to align this with their goals and other related resources (McAlearney, et. al., 2005). Indeed, making such decision requires various types of changes within the whole organisation. In fact, this strategic decision comes as a need of medical institutions to cope with technology developments for delivering better medical care (McAlearney, et. al., 2005). However, physicians' expectations of technology sometimes are higher than the capabilities of implemented EMRs, which create disappointments thus resulting in widespread user resistance (McAlearney, et. al., 2005). All these issues should be considered carefully in order to be able to understand issues around successful adoption of EMR.

Paré et al (2014, p.548) note that healthcare sectors in general have come to be heavily dependent upon Health Information Technology innovation; the reform, development and advancement of this sector is therefore governed by technology driven innovation.

In the interaction between health technology, a health care professional and the patient, the passive technology user (patient) gains trust in the technology after evaluating the health professional who uses the technology, how he/she uses it and the characteristics of the technology (Qiao, Asan and Montague, 2015, p.360).

2.4.5 Managing and Decision making

Introducing electronic health records can be of major significance in improving the overall healthcare provision in a given setting or country (Ben-Assuli, 2015, p.287). EHRs are described as systems that integrate the history of patient care from different settings to electronic files that can be easily accessed by health care providers so that they can coordinate and plan the patient's care, evaluate care outcomes and document care episodes (Qiao, Asan and Montague, 2015, p. 357-358). Incomplete problem lists represent an integrity problem of global data that would put the patients at risk or compromise the quality of healthcare. (Wright et al., 2015, p.790).

The range of problem list completeness was widespread across all the healthcare facilities. However, other facilities have had top levels of problem list completeness in the past. IT is important to having a better understanding of the factors that contribute to success. Knowing this would help improve the quality of healthcare facilities provided and hence improves patient safety. The researchers concluded that completeness of problem lists varied across

healthcare facilities (Wright et al., 2015, p.790). When looking at EHR systems at the ten healthcare facilities, six success factors were identified. The factors can be used by organizations of healthcare in improving the quality of the problem list documentation. One of the factors identified that was associated with success was shared responsibility.

2.4.6 Overview

It is prudent that the different types of issues are taken into account when transitioning to EMR; these crucial issues include cost of EMR, acceptance of EMR usage, confidentiality and security, technical and strategic issues. All these issues need to be highlighted during the transitioning process. It will be seen from above that many issues are at a high or general level, often of interest mainly to management rather than users of EMR, often arising as gross perceived or expected benefits of the EMR system as a whole, such as: reduction in medical errors in health care (Wang et al., 2003); storage and exchange of health information, patient safety and continuity of care (Urquhart et al 2009); improved billing and cash flow, enhanced revenue, reduced paper, printing and transcribing costs, improved utilization of tests, reduced recruitment costs (due to retention), improved quality of care, improved safety, improved patient education, improved co-ordination of care, and simplification of research-related processes (Beiter et al., 2008). Such issues are well known and repeatedly mentioned; they are high-level issues that are of interest to management and researchers. Mostly, management of organizations aim to achieve efficiency and effectiveness in order to obtain more profits or provide enhanced overall services.

The issues discussed in this section are higher-level issues of interest to the management, academics and ICT suppliers. However there are also, lower level issues meaningful for the users of medical records.

2.5 Lower Level Issues in the Literature.

This section discusses the importance of lower level issues that are meaningful for users, and to introduce the idea of the Down To Earth issues in literature review and user.

2.5.1 The importance of lower-level issues

The utilisation of information systems is influenced by a wide range of meaningful issues relating to of daily life experience (Ahmad and Basden, 2008); such issues are at a lower level than the issues discussed in the previous section. They reflect a given information

system's issues as an element of the user's daily activities, which in turn closely affects the quality of using health care services.

For example, Miller and Sim, (2004) discuss challenges and barriers that the practice physicians come across when using electronic medical records. In addition to issues such as high initial financial costs of EMR systems, slow and uncertain financial payoffs, high initial physician time costs, and technological difficulties, the authors list eight types of clinical and administrative activities normally conducted in physician practices. These activities include viewing, documentation, care management, ordering, messaging, analysis and reporting, patient-directed functionality, and billing.

Most of these are lower-level issues that concern physicians, in contrast to the higher-level issues that concern management. Such lower level issues are however important given that they are able to impact the effective EMR implementation, which subsequently enhances medical services. They are important in bringing about the high-level benefits that are of interest to management.

In the realm of EMR, such issues, once known, can help us design or evaluate EMR. If EMR systems are to fully meet the need of the users they must be designed to take into account the full range of such issues. If EMR systems are to be effectively assessed when in use, the assessment criteria must take into account the full range of such issues. Understanding Down To Earth issues are important to encounter different levels of difficulties of EMR adoption.

2.5.2 The idea of Lower-level down-to-earth issues

Ahmad provides both an explanation of Down-to-Earth (DTE) issues, as well as an overall approach to how they can be addressed. According to Ahmad (2008) the significance and meaning of DTE issues are unique to each individual and borne from his or her work based experiences. As individuals we provide meaning to these issues based on the quality of our work life, DTE issues are thus diverse in nature and primary found at the micro level. Herein lays a key differentiator between DTE issues and high-level issues. The latter only concerns issues of interest and meaning to management and suppliers, whilst DTE issues are of direct concern to the daily users of an IS. To address these issues we must firstly recognise them for what they are: issues of meaning and significance to the individual (Ahmad

2008). Furthermore, Ahmad's approach is flexible insomuch that it does not prescribe a list of desirable factors, instead opting to accommodate factors that are revealed as of relevance to the individual. According to Ahmad (2008) the approach is predicated upon recognising users as both individuals and social actors, a requirement which Ahmad asserts is missing amongst current practices.

Ahmad (2008) claims that her DTE approach addresses issues such misinterpretation on the part of the analyst, as s/he must focus on issues which are of meaning to the user and not what the analyst deems significant. DTE takes a holistic approach to understanding issues prevalent in IS use thereby examining both direct and indirect issues. In doing so it avoids the narrow theoretical focus imposed by other approaches.

DTE goes further by aiming to enlighten 'hidden issues', issues which the users themselves may not be explicitly aware of or which may have multiple interpretations. The approach also recognises the idiographic nature of the mundane. These plethora of issues emerge each day, which DTE manages in an efficient manner. As far as actual differences are concerned, high level issues are of interest to those who have a vested interest in a system, though not direct users. High level issues therefore interest management, academics and ICT suppliers. Alternatively, down-to-earth issues tend to be those which are more pertinent to everyday users of a system.

The users include: physicians, nurses, technicians, medical records, Clerks, para-medics, admission and discharge officers. For example, technicians have no issue with computers since they have a considerable level of IT literacy, while physicians and nurses need to have easy designed software and fewer transcriptions to be written. Therefore, implementations of EMR system have various kinds of user's resistances and different user's expectations, and identifying all of the issue is crucial for EMR successfulness.

Overall, EMR effectiveness is affected by the successful determination and consideration of Down-to-Earth issues, where they are directly linked to system's users and their daily life experience. Therefore, it is important to discover these issues and understand their implications on the EMR effectiveness. This characterization of the difference between Down To Earth issues and high level issues not fully satisfactory, as will be seen as we

examine examples of how Down To Earth issues are discussed in the literature, a better understanding will be suggested in chapter.3

2.5.3 Down-to-earth issues in the literature

The literature on down-to-earth issues remains relatively limited in comparison to literature discussing its higher-level. Unfortunately, the kinds of issues that are meaningful to users of EMR as well as those which directly influence success or failure of EMR in use, tend to be given less focus within the literature. Certain issues are consistently overlooked or ignored within the literature. Down To Earth issues are nearer to daily life experience of users than issues that are meaningful in the literature, which are governed by authors' perspectives. The process of defining issues in literature is affected by researchers' interest of the literature; where most of the identified meaningful issues tend to be less associated with the direct users (Ahmad and Basden, 2011). The issues that are given focus within the literature as well as the academic arena tend to be a reflection of researcher and scholarly interest, as opposed to actual needs of the healthcare sector.

With this in mind, this subsequent sections provide a discussion of the nineteen papers that mention Down To Earth issues in connection with EMR; these papers go as far as to report on the actual experience of using health records. Authors seldom discuss down-to-earth issues of health record use directly, but sometimes mention them indirectly in connection with other themes.

2.5.4 Papers discussing Down To Earth issues

The literature on EMR is varied, and the issues it addresses seem to be very wide, and at lower levels of issues. Nineteen papers have been selected on the following basis:

- They discuss Down To Earth issues in connection with MR.
- They mention actual experience of using health records,
- They are retrieved from the sources such as Google Scholar, University E-journals and reliable online sources.

Since this research concerns how to study DTE in EMR uses rather than in the literature, these nineteen articles are used to form a picture of how the literature deals with DTE issues,

rather than try to find out all the DTE issues they discuss. Later in this research, Chapter 7 will explore existing DTE issues within the literature.

The literature is examined on a paper by paper basis, rather than by topic by topic, for several reasons. Ahmad (2010) indicate that there are a "plethora" of DTE issues; the researcher's own work attests to this as her own work experience and daily life of EMR uses showed a very wide range of issues. The researcher is not assuming in the literature review to know what issues there will be and wants to find out the issues from users. Sometimes, although the literature mentioned DTE issues that not meaningful for the users or in different perspective from EMR uses.

2.5.5 Discussion of the Papers

This section discusses nineteen papers selected according to the criteria listed above.

Article 1: Physicians' use of electronic medical records: barriers and solutions, by Miller and Sim (2004)

The authors present the result of a qualitative study on challenges and barriers that the practice physicians encounter when using electronic medical records. Their aim is quality improvement in EMR.

The authors find there is need for integration of policy to improve EMR. This article has been chosen for three reasons:

- It used qualitative study.
- It recommended quality improvement to EMR
- It discussed two types of issues, both high level issues and Down To Earth issues.

The authors list eight types of clinical and administrative activities normally conducted in physician practices: viewing, documentation, care management, ordering, messaging, analysis and reporting, patient-directed functionality, and billing. Most of these are relatively down-to-earth issues for which EMR can provide capability.

Moreover, much of their paper is still devoted to high-level issues like improving patient safety and quality care in general, the promotion of evidence-based medicine, high initial

financial costs of EMR systems, slow and uncertain financial payoffs, high initial physician time costs, technological difficulties, complementary changes and support, and the exchange of electronic data between the various systems. However, these issues involve some DTE issues about benefits and barriers of EMR, including the following:

High-level issues (Benefits)

- Billing
- Ordering
- Computer skill literacy

High-level issues (Barriers)

- Cost
- Technology
- Technical support
- Data exchange

Down To Earth issues (Benefits)

- Messaging
- Documentations and care management
- Viewing

Down To Earth issues (Barriers)

- Time

Article 2 Communicating about medications during primary care outpatient visits: the role of electronic medical records. Inform Prim Care 2005, by Arar NH, Wen L, McGrath J, Steinbach R, Pugh JA.

The authors present a study of the patient medication exchange between physicians and patients in primary care; they make use of an ethno methodology technique among six physicians who use EMR.

This article has been chosen for the following reasons:

- It discusses the exchange patient medication in EMR.
- It does not compare the EMR with patient paper records.

- It includes the transcripts for physician and patients.
- It includes some DTE issues.

The authors' discuss high-level issues that relate to

- Cost
- Administrative issues that involved DTE issues.

In their discussion of the promise of EMR in a pharmacy context, they highlight a number of down-to-earth issues, such as:

- The need to review patients' health records,
- Medication profiles update,
- Laboratory tests ordering
- Evaluation, Legibility
- Consequent prescription errors

They discuss how EMR could help by alerting providers to potential prescription problems, including drug allergies and interactions, to generic prescription alternatives, to increased phone and fax usage from pharmacies to physicians, and so on. They recognize these can result in more generic benefits like cost reduction, decreasing administrative and safety benefits and improving communication between patients and providers, with subsequent patient-centeredness.

Article 3: Preventing Medication Errors in Hospitals through a Systems Approach and Tech by Crane & Crane 2006

Crane and Crane (2006) emphasize corrections or avoidance of medical errors by EMR usage, such as mistakes in prescribing or delivering medication to patients, drug interactions, and adverse side effects or allergies. Such errors are pervasive in hospital settings (Flynn et al, 2002).

This article has been selected for these reasons:

- It discusses the communication between physician and nurses
- It concerns medical errors
- It discusses process and tracks in EMR

The authors mention high-level issues that involve some DTE issues, including:

- Issues of communications with clinicians;
- Access to medical knowledge, technique monitoring, patient information sharing;
- Error tracking and reporting
- Patient privacy and possible misuse of records and resultant patient harm

However, though EMR can help prevent such errors, Middleton (2008) and Orser (2000) argue that other solutions are also available. Both sets of authors posit that solutions encompass issues such as better staff training, better timing, and better error tracking and reporting, adopting best practices from highly reliable industries, better labelling, and system redesign. Successful collaboration between nurses and physicians is positively associated with patient outcomes (Baggs et al. 1999), of which effective communication, both written and verbal, is a key component (Nelson & Venhaus, 2005). Physicians see detailed assessments and well-described interventions of nurses as critical to their ability to effectively practice medicine. The EMR is a focal point for nurse/physician communication and collaboration (Kash et al., 2005). This raises many down-to-earth issues.

Article 4: Interdisciplinary collaboration and the electronic medical record Paediatric Nursing by Green & Thomas 2008.

A number of down-to-earth issues can be found by examining discussion relating to the use of paper records, including their problems.

This article has been chosen due to the fact that it mentions DTE issues like the following:

- Lost or damaged pages,
- Illegible handwriting, and
- Mistakes and poor care.
- Such issues might have their equivalents in EMR.

This article also includes high level issues, such as: the consequences of complex accessibility. The authors found that physicians desire nursing documentation with greater clarity and additional information. They argue that checklists alone for patient assessment and intervention data are insufficient because narrative nursing summaries provide invaluable guidance for medical treatment decisions, including such things as patient-caregiver

interaction, parental nurturing behaviours, and other important psychosocial information. Therefore, EMRs should enable nurses to document detailed patient data in a swift and straightforward manner. Unfortunately, though the technology and training related to EMR might allow for nursing addenda, they are not in a form that encourages such additional information. Issues can be found by looking at what data users want their systems to hold, for successful nurse/physician collaboration. The authors cite surveys that show these to be, (a) antecedents to changes in patients status, (b) documentation of changes in patient status, (c) nursing interventions performed in response to changes in patients' status, (d) documentation of physician notification, and (e) outcomes of interventions.

Article 5: Do electronic medical record (EMR) demonstrations change attitudes, knowledge, skills or needs? By Beiter et al., 2008.

Beiter et al., (2008) compare paper and electronic records in primary care. The authors report that attitudes, knowledge and needs of physicians, other staff and patients are impacted by change to EMR. Issues might vary across cultures, and comparisons between countries can bring some to light.

The authors discuss high level issues like costs, but many of these issues include some DTE issues, such as the following. On one hand, paper records bring to light problems such as:

- Non-availability of charts,
- Important data missing from charts,
- Poor legibility,
- Chart and storage-space.
- Difficulty in accurately maintaining problem lists and tracking preventative services.

On the other hand, the amount of time spent with patients was reduced by EMR; EMR use detracted from physician-patient interactions, and physicians' workload increased under EMR. Patient privacy and confidentiality is also a concern with EMR.

Article 6: Adoption of information technology in primary care physician offices in New Zealand and Denmark, part 3: medical record environment comparisons by Protti et al. 2008.

Protti et al. (2008) discuss the use of EMR in several countries, especially Denmark and New Zealand; the authors reveal a number of issues, in the context of primary care. They found that issues of privacy and security are important in the eyes of physicians. In Denmark and New Zealand, the governments have set up systems and infrastructure, including policy frameworks that ensure this. Often data is collected from multiple EMRs and may be shared across health care settings and organisations.

Their paper introduces a theme that has thus far been neglected in the other papers reviewed, mainly- directories. In Denmark, an online 'Yellow Pages' is provided, which allows Danish primary care physicians to see who they can communicate with electronically. The paper discusses patient access, mentioning that the Danish national health portal, created in 2005 in order to provide information about the Danish National Health Service to its citizens and patients, is beginning to serve as a unified hub for electronic communication between patients and the health service. It permits both providers and patients to access laboratory results online via the Internet, medication profiles, waiting list information, online scheduling of primary care physician appointments, and email contact with primary care physicians and online renewal of prescriptions by patients.

In addition to security, the authors mention a number of high-level issues, including:

- Communication standards
- Access to 'shared' clinical EMR data (the authors are of the opinion that it is important to distinguish between a physician's office/clinic, p.287)
- A list of provisions facilitated by the Internet, these include online patient prescription renewal, primary care physician appointments which are scheduled online, email correspondence with primary care physicians as well as waiting list information and medication profiles.

In discussing paper records, the authors' draw attention to some DTE issues such as:

- Problem of hundreds of different paper-based forms for discharge letters, hospital
- Referrals, lab results, etc., which led to the 'one letter' system being introduced

Article 7: The electronic medical record: pros and cons by Maria Luisa Ventura, 2011.

Ventura et al. (2011) argue that, to improve treatment of the most critical patients, it is imperative that a paperless system is implemented; one that is capable of effectively

coordinating bedside clinical observation with machine monitoring data, life sustaining instruments and results from the laboratory. A key element for a successful paperless implementation is the manner in which these vital pieces of information are tangled together and presented. Both these studies are relatively narrow in focus, the first being on the 'ambulant' theme, and the latter on critical patients. This casts doubt on the generality of their findings.

In the electronic system they describe, there is still a need to transcribe by hand, human and machine generated data, clinical notes and other information. This process is laborious and time consuming, and must be carried out even in time-critical situations. The requirement for these is partly imposed by legislation and partly by internal regulation, and so attention and precision are required. The transcription of medical orders into nurses' records introduces inaccuracy, some of which could have severe consequences (especially in prescriptions and administration of drugs).

Another issue is the design of the user interface, which should provide an overall view of all up-to-date information concerning the patient. Downtime during software upgrades or hardware maintenance, though rare, requires a return to paper records.

The authors mention a number of high-level issues, including:

- Successful paperless implementation,
- Legislation.
- Transcription process.

Article 8: End-user support for a primary care electronic medical record: a qualitative case study of a vendors perspective by Shachak et al. 2012.

Shachak et al. (2012) focus on support as a critical success factor, claiming that studies of EMR implementation often mention this only briefly. Whereas some differentiate support from managers and colleagues from technical support, the authors take a more user-centred view, which conflates any support activity that assists with more effective use of the system. What seems important in support are more down-to-earth issues, like whether it is formal or informal, on-site or remote, what is supported, and the characteristics of support like timeliness, knowledge, and communication and counselling skills.

This article was chosen because it discussed technical support from the user's the point of view.

The DTE issues in this article include:

- System use by users
- Technical supports for users

High Level issues are also mentioned, including:

- Support factors, sources, location, and activities of personnel including timeliness, knowledge, and communication and counselling skills.
- Improving quality and safety

Article 9: Organizational Factors that Influence Information Technology Diffusion in Academic Health Sciences Centres by Ash et al. 1997.

Ash et al. (1997) discuss organisational factors impacting the implementation of information technology systems in the academic health science sector. The classical organisational theories explore the effect of innovations in the technologies adopted for administration and communication purposes, for example, the adoption of electronic mail by an organisation.

The research discloses the influence of various operational and administrative factors on three selected computerised technologies. The success of the technical innovations primarily depends on organisational factors such as communication and employee participation.

Often, user reactions and attitudes towards technical innovations tend to be influenced by perceived benefits and the knowledge of the change these are likely to herald as far as their specific job roles are concerned. . Organisational factors greatly affect the timely dissemination of information among individuals. The authors report that measures used to assess individual perceptions and attitudes towards technical innovation often bring to light the fact that organisational variables are crucial for adaptability of such modern techniques. However, the response of an individual may vary depending on his/her personal attributes and knowledge level. Accordingly, an organisation should emphasise the importance of employee training if it is to achieve better results. Both the implementation and acceptability of the modern technology depends on factors responsible for organizational and individual behaviour.

The research can benefit health care professionals in dealing with the implementation issues within the context of information technology.

This article has been chosen because it discusses the organisational factors that affect the technology.

High-level issues mentioned in the article include:

- Knowledge level of the users for using technology
- Organizational factors affect the uses of system.

DTE issues mentioned in this article include:

- Communication between the employee for administration and other purposes
- Training for the users, usually the users need more training to use system

Article 10: IT in Health Care: Socio-technical Approaches "To Err is System" by Aarts, et al 2006.

This research deals with the impact of social attitudes and organisational environments upon the technological advancements in the health care sector. The authors' mention that Berg upholds that social factors have an influence on the development and maintenance of information systems in organisations. The uptake and subsequent success of technology implementation is said to depend on socio-cultural factors. The authors emphasise the fact that focusing on technical aspects is simply not enough to guarantee implementation success.

As such, the integration and collaboration of all the social and technical aspects are necessary for achieving technical proficiency in health care organisations.

In this respect, this article is regarded as being especially useful and relevant to the study of IT and the healthcare sector. In particular, the authors go beyond the study of conventional actors such as physicians, nurses and management and extend their research lens to include patients and the role they play as far as healthcare systems are concerned. The article in question goes further, asserting that patients should not be ignored and instead play a role in the development of healthcare systems. As far as the DTE issues are concerned, these include patient contributions to healthcare systems whilst high level issues mentioned include social and technological factors and their impact on health care systems.

Article 11: Emotional Aspects of Computer-based Provider Order Entry: A Qualitative Study by Sittig et al. 2005.

The research conducted by Sittig et al., aims to assess the qualitative aspects surrounding the introduction of Computer-based Provider Order Entry (CPOE) in the health care environment. The use of the CPOE system for performing regular clinical functions is greatly affected by emotional aspects relevant to the organisation. The research addressed the problem from the perspective of an individual's ability to adapt the system. There are both, negative and positive reactions of individuals observed following the implementation of the system under investigation. There is a need to understand the emotional aspects of the people involved in its implementation, including the perceptions of the clinicians towards the implementation and performance of the CPOE system. The findings suggest that the failure to heed the behavioral aspects that emerge from observing clinicians may contribute to implementation failure. Feedback is therefore suggested as a suitable means through which to address any behavioral or emotional issues that emerge within such a context.

Additionally, development of a positive outlook towards the CPOE system can help in addressing the concerns of the clinicians. This could be achieved by prompting them for important tasks at regular intervals, thereby, reducing their stress levels. The timely accomplishment of all such tasks can help in raising their performance. Any emotional disturbances likely to be caused by the introduction of the CPOE system should be kept into consideration right from the design phase. The research can therefore be of use to organisations looking to upgrade their existing information technology systems. It is not uncommon for management to overlook the behavioural aspects relating to the implementation of any new technology.

This article has been chosen because it discusses the role of users that should be considered during the system implementation.

DTE issues mentioned in this article include:

- Emotional aspects
- Behaviour aspects
- Feedback analysis.

High-level issues mentioned in this article include.

- System implementation
- Management role regards system compilation
- Clinical decision support.

Article 12: Antecedents of the People and Organizational Aspects of Medical Informatics: Review of the Literature by Lorenzi, et al, 1997.

This research study explores the extent to which organisational factors impact upon the successful implementation of information systems in the healthcare sector. The examination of organisational factors can be especially useful when considering any post-implementation changes affecting the social or cultural environment of an organization.

The research is seeks to address multiple issues relating to motivation, management and user resistance. The strategy for dealing with such personal and organizational issues should be planned, giving consideration to the specific needs of the organization.

The outcome of improved technology can be greatly influenced by effectively devising a strategy to overcome any perceived organisational hurdles. The changes can be well managed by training and creating awareness among the employees of the organisation. The significance of organisational factors cannot be overlooked in the healthcare sector. There are several groups of individuals affected by the change in information technology. Therefore, an integrated approach needs to be deployed in order to ensure the success of the upgraded system.

Involvement of people from all the processes such as communication, designing, and project management can help in better change management. The research can be greatly helpful in managing the technical changes in the healthcare sector. This article has been chosen because it explores factors that might change organisation systems, especially post implementation.

DTE issues mentioned in this article include:

- Communication, designing, and project management can help in better change management.

The authors link this with DTE e.g. in the following:

- Training
- Creating awareness among the health care providers of the organization.

User involvement and participation as well as developing an understanding into the factors that shape behaviour including intentions, attitudes and beliefs

High-level issues mentioned in the article include:

- Issues relating to motivation, management and resistance of people.
- Designing, and project management, which can help in better change management

**Article 13: The Nursing Informatics Workforce: Who Are They and What Do They Do?
By Murphy 2010.**

The research study explores the major functions involved in the job role of Nursing Informatics (NI) and the manner in which NI has evolved as an integral part of the healthcare service delivery. There are many new developments taking place in the sector of nursing science, including the introduction of information technology in the healthcare operations. As per Murphy (2010), Nursing Informatics (NI) is an important branch that integrates information technology and nursing science.

Due to the limited skill set of the current nursing workforce and a huge gap between the advancements in the healthcare services being rendered and the conventional practices, a need for introducing NI and Chief Nursing Informatics Officer (CNIO) has evolved. The research provides a solution for bridging the gap between the current nursing skill set and the healthcare advancements in the form of two new job roles in the nursing hierarchy. The author suggests that in order to match with the advancements in the healthcare sector, nursing science has been considered for bringing the evolution as they are considered to be front-line for the healthcare. The harmonisation of nursing skills with information technology as a means of increasing the efficiency and effectiveness of healthcare service delivery has been proposed by the author. The author has explored the significance of dual knowledge of information technology and clinical background in the positions of NI and CNIO.

DTE issues in this article include knowledge of information technology and clinical background in the positions of NI and CNIO Nursing skills. High level issues discussed in the article include new developments taking place in the sector of nursing science, including the introduction of information technology in the health care operations as well as the important role played by nurses who in many respects are at the front line of the sector.

Article 14: Evaluation of the Suitability of a Patient Data Management System for ICUs on a General Ward by Junger, 2001

This research paper aims to assess the impact of Patient Data Management System (PDMS) on general wards. The evaluation of the present software being used for management of data in ICUs explores that the present PDMS employed is highly flexible and adaptable depending on the type of data processed. Data generated by general wards in clinics needs to be handled appropriately due to the high volume and difficulty involved with such data (Junger, 2001). A flexible PDMS currently implemented in ICU's for effective data management may be helpful for the data required to be handled at the clinics.

There are a few key principles that need to be considered when opting for a system of data management in any organisation (Junger, 2001). The client-server methodology has a number of functionalities that would work appropriately for the proper administration and presentation of client data.

Absence of a standard system for the administration of patient data in hospitals and clinics is the reason for the improper execution of the data management systems.

DTE issues mentioned in this article include:

- User authentication.
- Patient administration (admission, discharge and transfer)
- Graphical patient chart (management of clinical data like drug administration, vital signs, nursing procedures, etc.)

High-level issues mentioned in this article include:

- The complexity of medicine leads to specialization, for which different companies are developing specialized solutions, often
- The value of a clinical information system depends on the amount of available clinical data
- Money is always a limited resource. Therefore modularization, communication and standardization are the keywords for this architectural approach.”Pg.58
- Medical device interface processes (MDIP; online data collection).

Article 15: To Decay is System: The Challenges of Keeping a Health Information System Alive by Wetter, 2006

The approach to information systems implementation in the healthcare sector needs to be maintained in accordance with the developments taking place in the sector.

There are a number of technical improvements that have taken place in the HIS (Health Information System). However, there are still a number of inadequacies reported in the upgraded system that needs to be handled appropriately.

There are a number of problems in the implementation of an effective information system in the healthcare sector. The new knowledge and all the other developments need to be addressed in order to derive a constructive solution to the problems.

This paper is relevant to the research as it aims to review the impact of various factors responsible for the decline of the present system. It further illustrates the signals indicating a decline in the system and the manner in which the information system can be adjusted for the encountered problems. A thorough analysis of the healthcare environment reveals the key determinants accountable for a decrease in effectiveness of the adopted information system.

The various risks associated with the usage of the system, processes and environment need to be addressed suitably in order to upkeep the present system of information technology. Any unexpected usage of the system by the intended users may lead to a decrease or degradation of the existing system.

The developments necessitating an upgraded system have their source in a variety of issues such as evolving IT environment and medical knowledge in the healthcare sector. The research can greatly help in dealing with the major developments taking place in the information system of healthcare organisations.

This article discusses a number of high-level issues, including:

- Targeted users
- Care processes
- Software environment
- State-of-the-art medical knowledge
- Vendor–provider–customer constellation

DTE issues mentioned in the paper include the following, but some are also high-level issues because they are of interest to ICT suppliers as well as users, or are mixed in with high level issues.

- Number of user IDs per person
- Number of progress notes, orders for procedures, etc.
- Number and duration of sign ins of clinical users. When users who used to sign in for half an hour six times in a 12 h shift, are now signed in for an uninterrupted 72 h,
- Complaining would be the better option. It opens the chance for things to get better
- Notice how some are informational, some technical, some are work issues, and some are social issues.

Article 16: What does it take to replace an old functioning information system with a new one? A case study by Kyhlback & Sutter (2006)

Kyhlback & Sutter (2006) explore the issue of implementation of an advanced information system of documentation for wound care management. The nursing practitioners need to visit the patients, specifically elders, in order to provide wound treatment and medication. This paper discusses the requirement for interacting with the patients and also the usage of multiple tools for providing wound care. There are also a number of complexities involved in the transition from the old system to a new system.

The authors point to the new information system need to address the primary concerns of the nurse practitioners. The system of wound care has witnessed a number of changes in the recent past and the new socio-technical system of healthcare should especially address the issues of regular mobility requirements, need for interacting with the patients and usage of diverse tools for treatment purposes.

The research aims to help in the development of an advanced system of documentation for wound care to be used by nurse practitioners. Usage of modern systems such as capturing digital images of a patient's wound and upgraded documentation system for recording patient data will help in improving the quality of health care. The implementation of a new system has become quite necessary due to the rapid developments that have characterised the healthcare in the past decades. The nurse practitioners need to adopt a new system of healthcare in order to provide better wound care to the elderly patients.

A highly flexible work schedule, the requirement for establishment of an effective personal communication medium with the patients and multiplicity of tools used for treatment purposes are the specific features, which should be given highest priority in the new system. The research can be of great help to the clinics trying to develop an advanced system of information technology for the nurse practitioners providing wound care to the patients at their home.

This article has been chosen because it discusses DWR (Develop computer We Recommend). This method involve users to participate in design also focuses on the system and users essentially, the authors state that DWR focuses on innovation systems at a local level. In this sense it can be referred to as 'interactive research' or a form of 'action research'. In terms of its overarching framework, DWR is works though an activity theory lens which acts as the foundation for any subsequent research guidance and analysis. DWR is comprised of the following processes which can be surmised as such:

- The [collective] activity system is first set as the unit of analysis. Context is provided, as well as meaning to what can be deemed as random events.
- Second, a historical understanding is applied to the activity system and its respective components.

Finally, the activity system is identified as having inside contradictions, which are then able to be analysed and determined as the source of any innovation, disruption or development of the system.

The paper discusses a number of high-level issues, including:

- Design for nurses' work practice in a socio-technical context of Swedish health care
- Validity of the replacement of an old-fashioned, albeit functioning, socio-technical system
- Contradiction between the old and a new way to document work that takes more time and an extended set of skills to perform
- Security of documentation work

DTE issues found in this article include:

- The nurse's dependencies of high mobility, social interaction and utilizing a vast diversity of tools.
- Nurses need to meet a lot of patients in their own housing
- Nurses design and redesign their standard set of artefacts in order to get the everyday work done in a proper way.
- As conceptual tools in a further developed approach grounded on DWR. For the matter of Object-Oriented System Development of computer systems we recommend the DWR approach to be inspired by and as we believe a successful way to deal with identified problems have designing new socio-technical systems.
- The nurse is the one that sets up new documentation paper work containing references to physicians diagnosis, descriptions on treatment and she maintains proper reports on current status
- Nurses familiarising themselves with the new system
- Communication among nurses and patient
- Characterizes the socio-technical system of wound care work is in our case three things: First, the nurses are on the go and on the move, second, they are interacting face-to-face and in different places with a lot of people, and third, they use a variety of artefacts, the combination of which they not seldom design themselves. The bag-on-wheels contains the set of artefacts most needed and provides one access point to those at home of the individual care recipient as well as allowing for rapid shifts between various places. In municipal elderly care, the bag-on-wheels obviously is still a working mobile information system.
- The documentation is not available or insufficient in some sense

Article 17: Ethnographic Study of ICT - Supported Collaborative Work Routines in General Practice by Swinglehurst et al 2010

Swinglehurst et al. (2010) have discussed the use of qualitative methods for the study of healthcare processes. The research also addresses the impact of Electronic Patient Records (EPRs) on medical practices. Most of the research in the healthcare sector has emphasised a quantitative and assumption based approach (Swinglehurst, et al., 2010). There is also a need for a qualitative analysis in order to identify the new knowledge generated in the field of healthcare.

The research explores the manner in which the integrated processes can be developed in the sector of healthcare over a period of time (Swinglehurst, et al., 2010). It also emphasises the scope of improvement in information technology such as effects of improvement in the system of Electronic Patient Record (EPR) and other communication mechanisms used in organisations.

The research is focussed towards a comprehensive qualitative study of the integrated work practices in various healthcare organisations. It also includes an analysis of how these practices are derived over time and also a comparison of the corresponding practices for different organisations. It also intends to measure the impact of an EPR system for documentation purposes.

The research reveals that there are a number of routine processes having a bearing on the working of healthcare organisations. The research aims to detect errors and inadequacies in the routine technical processes such as the EPR's and also prescribe an approach that may prove to be effective for the technical improvements.

The analysis aims to prescribe a modern qualitative approach to study the work practices followed in routine processes of healthcare organisations. The research can prove a good source of knowledge for health organisations aiming to improve their routine technical processes.

- Analysing the divergence between ostensive and formative aspects of routines and the artefacts through which members attempt to codify and capture these can reveal rich meanings in aspects of organisational life (data entry, telephone calls, administrative notes)
- Conflicts between management and staff, or conflicts between the organisation and a wider public. For example, a 'health and safety' poster may be displayed within a reception area as legal requirements but have little or no impact on individual or organisational routines relating to health and safety.
- Divergence between artifacts and per formative routines may reveal organisational power struggles.

This article included DTE issues:

- Studying routine work of hospitals, which are oriented to everyday practice.

- Included both clinical and administrative work
- Involve both primary and secondary EMR uses in their study
- Repeated prescriptions
- Summarising and coding for inpatient and outpatient.
- Exploring the task process.

**Article 18 how are health professionals using health information exchange systems?
Measuring usage for evaluation and system by Vest, & Jaspersen 2012**

Vest & Jaspersen discusses the Health Information Exchange (HIE) systems and its utilization by the medical community for the healthcare of the patients. The participants of the healthcare sector have greatly applauded the benefits of an information system exchange mechanism such as the HIE. There is a requirement for a timely and efficient system to exchange information relating to patients within and across organisations. Moreover, such an exchange mechanism will lead to better decision-making and reduction in the overall costs to the patients and organisations.

The evaluation of the present system of HIE will help in addressing the concerns around its effective implementation by individuals. The research aims to make a detailed analysis of the present usage pattern and methodology of HIE in order to provide a deeper understanding of the problem areas and the scope for improvement. The system files of healthcare organisations have been thoroughly investigated and checked as far as the frequency of usage of HIE is concerned. There is also an evaluation done for the specific people requiring such exchange mechanism and their role in the organisation.

The betterment of the HIE in the organisation could lead to improvements in the system of health care. However, improvements can be effected only when there is a thorough understanding of the lower level issues of present system of exchange and the usage requirements of various participants in the organisations. There could be a number of positive developments in HIE by properly studying the frequency and timing of usage by different users and across organisations.

The research can provide a useful insight to healthcare organisations trying to improve their information exchange mechanisms.

High-Level issues mention in this article

- Description of available I-Care system screens used for pattern classification
- The value of creating a quality, master-patient-index and record locator feature into an HIE system.
- We recommend the development of new tools to analyze system user logs. User logs provide the mandatory audit trail to ensure patient privacy as well as compliance with The Health Insurance Portability and Accountability Act (HIPAA).

DTE issues included in this article:

- Potential HIE information users include nurses, registration clerks, social workers, office managers, public health professionals.
- Type of users related to workplace setting- here the authors specifically refer to physicians and practitioners from the emergency department for children as those who would have the least contact and interaction with the system. Demographic and clinical information therefore tends to be more pertinent to groups such as nurses, pharmacists and public health workers.

Article 19: Problem list completeness in EHR, Multisite study and assessment of success factors by Wright, McCoy, Hickman, Hilaire, Borbolla and Bowes (2015)

The main reason for designing problem lists is to improve the care of patients, particularly, the primary care of patients. There are other benefits associated with problem lists such as conducting research, creating the patients' registries and identification of the patients' population to enhance the quality of services provided. Clinical decision support rules depend on how complete, accurate or coded the problem lists are. According to the author, more accurate and complete problem lists improve healthcare provision. The main purpose of the article was to assess the completeness of problem lists by use of objective measure using a variety of sites. The other objective was to assess the factors that led to the success of completeness of a problem list.

The range of problem list completeness was wide across all the healthcare facilities. However, other facilities have had top levels of problem list completeness in the past. There is importance in having a better understanding of the factors that contribute to success. Being equipped with such knowledge allows for improvements in the quality of healthcare facilities

provided and hence improves patient safety. The researchers concluded that completeness of problem lists varied across healthcare facilities.

When looking at EHR systems at the ten healthcare facilities, six success factors were identified. The factors can be used by organizations of healthcare in improving the quality of the problem list documentation. One of the factors of success was shared responsibility. This is a DTE issue, but in this paper a number of high level issues were mentioned:

- Financial incentives: two of the four top-performing sites had financial incentives related to problem list completeness.

Problem-oriented charting: the top-performing site used a mandatory version of problem-oriented charting stating, the structure of electronic records dictates that problems are first recorded once presented by the patient, as opposed to firstly recording history, performing examinations, investigations etc. Priority is thus given to patient symptoms and concerns. This system provides a strong forcing function to record problems, including diabetes, as there is no place to enter documentation.

- Gap reporting
- Shared responsibility: most sites depended entirely on physicians to maintain the problem list.
- Links to billing codes: most sites separate the problem list from encounter-based diagnosis coding for billing
- Organisational culture: a practice reported at several of the top sites was simply an organisational culture or practice of assiduous use of the problem list within and across groups. In these organizations, use of the problem list was simply expected, and widely practiced
- Maintaining a complete and up-to-date problem list
- Organisations seeking to improve their problem lists should consider adopting such practices

All these were meaningful at the level of the organisation.

2.5.6 Reflection on Papers

The 19 articles presented thus far all include DTE issues to varying extents. The way they treat these DTE issues will be discussed in the next section. Although authors have mentioned DTE issues, a number of challenges can be seen.

The next section draws out needs for this research from these five challenges.

1-Hidden issues

DTE issues were not always explicit mention, rather in some papers, these were implicitly or unconsciously mentioned. For example, Article 3 (Crane and Crane 2006) emphasize corrections or avoidance of medical errors by EMR usage, such as mistakes in prescribing or delivering medication to patients, drug interactions, and adverse side effects or allergies. These are obvious DTE issues, but some of the high level issues that the authors mention involve some DTE issues, including issues of communications with clinicians, access to medical knowledge, technique monitoring, patient information sharing, error tracking and reporting, with all of which EMR can help. Such issues are of interest to managers and much discussed in academic discourse, but they also contain Down-to-earth issues hidden within them. For example, communication between nurse and physicians is linked with keeping patient information confidential and doing a proper job.

Likewise, nurses might not know how to correct the certain types of errors e.g. medication dosage, work overload might lead nurses to forget to enter the medication correctly, and even though the hospital has late entering policies, there are no formal monitoring processes in place to ensure that this done. As such, within many issues mentioned in the literature, some remain hidden, which the authors might imply unconsciously but are not described clearly. Such hidden issues must be taken into consideration during EMR design. The challenge of hidden issues is recognised by Ahmad and Basden (2013).

2-Missing issues

A wide range of Down To Earth issues are mentioned in the papers but the researcher's experience suggests that many issues are missing and not discussed in the literature, and not even hidden in other issues. For example, a new-born baby has no identification number so their details are attached to the mother; additional issues include the fact that some consultants give the nurse authority to prescribe the medication. Also, issues that are meaningful to medical record technicians and the processes they use are seldom discussed in the literature. Such Down To Earth issues are missing in the literature, even though they relate to success of EMR in healthcare 'on the ground'.

3-Mixed issues for EMR uses

Frequently, DTE issues are mixed with high level ones, without differentiation. For example, though article 1 (Miller and Sim 2004) mentions DTE normally conducted in physician practices, such as viewing, documentation, care management, ordering, messaging, analysis and reporting, much of the paper is still devoted to high-level issues including quality of care in general, the promotion of evidence-based medicine, high initial financial costs of EMR systems, slow and uncertain financial payoffs, high initial physician time costs, technological difficulties, complementary changes and support, and the exchange of electronic data between the various systems. The former issues are meaningful to users while the latter vary in meaning depending on the stakeholder group i.e. management, academics and ICT suppliers.

Similarly, article no.15 (Wetter, 2006) discusses high level issues like targeted users, care processes, software environment, state-of-the-art medical knowledge, and "vendor-provider-customer constellation". These issues are lumped together with issues meaningful for users, like user IDs, progress notes, procedures, sign ins of clinical users. In both articles there is no attempt to differentiate between high and DTE issues. This lack of differentiation is widespread.

4- Classification of issues

There is also a need to classify DTE issues themselves. In the literature, high level issues are already classified, as for example in Section 2.3. However, Down To Earth issues are not being classified in the way that high-level issues tend to be. There is no accepted classification for Down To Earth issues. Lorenzi et al, (1997) offer a classification for "business and organisational issues", however these are not explicitly related to the healthcare sector. Classifications are important for several reasons, some of which are discussed more fully in Chapter 8. To evaluate the system, classifying DTE issues can help to separate issues tangled together. To design the system; classifying DTE issues help avoid overlooking issues during design of the new system. Classification of DTE issues can help allow for the delivery of more effective user training as far as EMR systems are concerned, as well as in updating the policy and procedure of EMR usage. To share understanding about MR. classifying DTE issues help to provide the explanation for managers or others to

understand MR more robustly. Therefore, there is a need for a conceptual tool or framework to classify Down To Earth issues.

5-Shared issues

Articles include a number of issues that are meaningful for users and others from different perspectives. E.g. article 15 (Wetter 2006) discusses the number of user log-ins: “number and duration of sign ins of clinical users. When users who used to sign in for half an hour six times in a 12h shift, are now signed in for an uninterrupted 72 h”. This is a shared issue. To management, it is an issue of the number of hours that healthcare staff work, which is calculated by time of sign in and time they signs out. However, often the workers sign in however fail to sign out. In addition they might sign in several times across different stations. The act of signing in is a DTE issue, while the number of hours worked is of interest to managers. The high level and DTE issues are linked in the issue of sign-in.

Often, the high level issues in this article are more technical issues, which, might be meaningful for ICT suppliers or the IT department. For example, “number of user ids per person” is both a ‘technical issue’ meaningful to the IT department and also a DTE issue meaningful to users themselves. Sometimes users forget their passwords so another account and password are created. When the researcher was working in a Saudi hospital she had multiple user-ids when she had promotions, all these ids needed to be remembered. Ahmad and Basden (2013) similarly discussed passwords as a DTE issue.

Another example of a shared issue is “patient safety”, which is meaningful for users and others from different perspectives. From the perspective of the quality assurance team, which is part of management, patient safety is meaningful in designing and setting guidelines. From the nurses' point of view, patient safety means several things: rescue patients in case of fire, insert needles properly, give right medication to the right patient, good post operation care, and so on. These three issues are meaningful for users as DTE issues but also meaningful for managers, ICT suppliers and academics in a different way. The high-level perspective of latter tends to have limited ways to being meaningful, whereas the DTE perspective of healthcare staff has wider ways of being meaningful.

2.6 Conclusion

These five challenges bring to light a number of points for further exploration as well as hidden issues waiting to be uncovered. . All issues are meaningful and there is different variety of interests for each users, therefore, there is a need to uncover hidden issues, because some users could not express the reasons for them to perform the required tasks. Missing issues imply a need to reveal and uncover hidden issues.

Coupling DTE with High-level issues implies there is a need to distinguish high-level from DTE issues. Shared issues imply a need for multiple aspectual conceptual frameworks that recognises that issues can be understood in several different ways. . The very nature of DTE means that the issues present different implications depending on the stakeholder group; managers, ICT suppliers, users and researchers all have their own unique interests and are likely to interpret these issues within their own world view. As a result, a clear, non-generic understanding of EMR uses from multiple perspectives will help this.

Lack of classification implies the need for a basis on which to classify DTE. Classifications are important for several reasons as highlighted above. To evaluate the system, classifying DTE issues help to separate issues that may otherwise be tangled together. To design the system; classifying DTE issues helps to ensure that these issues are not overlooked during the design of the new system. To update the transition to EMR, classifying DTE issues help in training the users to use the new system of EMR as well as help to updating the policy and procedure of EMR usage. To share understanding about MR, classifying DTE issues help to provide the explanation for mangers or others to understand MR more fully.

From these, we may conclude that there is needed a multiple perspective conceptual framework, and a method to apply the conceptual framework in order to reveal, uncover and classify DTE. Chapter 3 introduces a conceptual framework and Chapter 5 develops a method.

CHAPTER THREE: Conceptual Framework for This Study

3.1 Introduction

A conceptual framework is needed to analyse and classify the empirical context under investigation, in addition to guiding the overall study. There is no conceptual framework of medical records uses but there are several conceptual frameworks of IS uses that have been applied in EMR uses. This chapter explores three IS conceptual frameworks that have been applied in the health care sector and discusses how these fail to fulfill the three research needs mentioned in Chapter 2, mainly :

- 1-Reveal Down To Earth in EMR uses
- 2-Uncover hidden issues if there are any
- 3-Classify the diversity of Down To Earth issues

Following from this, a discussion of Dooyeweerd's philosophy is provided before going on to demonstrate its suitability to the underlying needs of the research.

3.2 History of Information Systems

During the 1960s, information systems were primarily utilised by managers and administrators of larger hospitals. The 1970s however ushered in a new paradigm which saw the development of information systems to be used in healthcare. Commercial companies headed this particular development, which came to be known as Health Information Systems (HIS). The HIS' were used for a range of tasks, including diagnosis, treatment case, health care target and measurements to help nurses to have good content in patient records.

Simpson and Weaver (2005) thought to combine health care content with IS in order to merge clinical care, administration and management together. Questionnaires were later used by the authors to evaluate the system.

Recently, HIS research seems more fruitful and four persistent categories tends to be the focus of related study, these include:

1. Factors that impact the input of system
2. System structure

3. Components of system
4. Efficiency of system

In 1975 Ajzen and Fishbein cited by Pai and Huang (2011) developed the Theory of Reasoned Action (TRA); this theory essentially posted that individual behavior was driven by behavioral intention, behavioral subject and norms. A decade later, Ajzen (1985) presented the Theory of Planned Behaviour (TPB) which focused on behavior comparatively and less controllable and based on assumptions that all behaviors are under control. Davis (1985) went on to develop the Technology Acceptance Model (TAM) which itself was based on the central tenets of both TRA and TPB theories; the purpose of the model was demonstrate how users come to accept and use technology.

Information System Theories

3.2.1 Technology Acceptance Model

Davis (1985) sought out to develop a tool which would essentially predict users' acceptance of information technology systems and thus arrived at the Technology Acceptance Model (Davis, 1989). . TAM has since enjoyed widespread use across health care research to find out managerial implications for both practice and academic issues.

TAM models the user's attitude toward the system based on the following concepts:

- 1- Perceived usefulness of the information system.
- 2- Perceived ease to use
- 3- Intention to use the system and accept it
- 4- External variables

External variables contribute to perceived usefulness and perceived ease of use. Examples include: quality of work, job performance and effectiveness for perceived usefulness, and controllable, mental effort and ease of learning for perceived ease of use (Davis, 1989). These concepts of TAM mean that it has the potential to help researchers think about users and issues that are meaningful to use. In general information systems research, TAM has stimulated researchers to reveal meaningful issues to do with use. This is done especially by reference to external variables, which are chosen to be meaningful about usefulness and ease

of use in the context of use. Yousafzai et al. (2007) collected the external variables for a number of papers that used TAM in general IS; the authors found more than 80 external variables that relate to usefulness and ease of use.

TAM as a conceptual model has been applied in the health care sector. Our concern here is to find out just how TAM has helped researchers to reveal, uncover and classify the issues in health information systems that are meaningful to system use. The following is a selection of papers that use TAM in healthcare, and which mention issues that are meaningful to use.

Khalifa and Alswailem (2015) used TAM to examine issues that such as “computer availability”, users acceptance and satisfaction. They conclude that healthcare users prefer mobile laptops. Some issues that had a bearing upon satisfaction included “downtime process” and the extent to which the system might “slow down the process of patient care” so there is “less time to spend with patient”. Lack of training was also an issue for users of HIS. So some users were not ready to use EMR and prefer the manual process.

Pai and Huang (2011) discuss how to use IT to develop health care systems. The authors applied TAM to target 100 hospitals randomly in Taiwan, evaluating their health care information systems in order to reveal the factors driving the use of, and intention to use HIS. With this they are able to evaluate, improve and plan. In doing so, this study points out meaningful issues like “accessibility, productivity, and work performance”. The authors integrate TAM and the Information Systems Success Model to justify and extend the Technology Acceptance Theory. This study is meaningful for practice and researchers. The authors argue if the users' belief system is good for their job and matches their needs, then their attitude will be positive for this technology. The authors argue that study into how information technology can be better harnessed to improve and develop healthcare systems remains a pivotal area that is deserving of scholarly interest.

Holden and Karsh (2010) argue that IT people usually focus on the system itself and its implementation, success and design, rather than on how health care users react to HIS and whether users accept or reject use or misuse HIS. They review 16 data sets in an analysis of 20 clinical studies that use HIS, and review other theories and application of TAM. They conclude there is a need to modify and develop TAM in HIS. They point out that, while some

studies concern users, most studies focus on EMR adoption. The authors point out there is potential to improve the quality of EMR and patient safety and, in doing so, mention a number of issues,

The use of TAM in these papers reveals meaningful issues to do with uses of IS in health care. However, most of these issues are meaningful from the point of view of researchers, IT, and managers, in order to develop, improve and evaluate systems in relation to an overall concept of acceptance. Only a few of the issues discussed concern the users' interest that affect HIS use at a down-to-earth level. This was true in the use of TAM in general IS, as shown by Yousafzai et al.'s (2007) study which revealed meaning full issues relevant to each stakeholder group. As such, issues such as “self-efficacy, skills and knowledge” were regarded as being e meaningful for the researchers, whilst “screen design, interface, internal computing” were applicable to those in charge of technical aspects. Other issues such as “organizational policies, argument for change” emerged as useful for management. In health care we find the same pattern. TAM can reveal the users reactions toward HIS, but usually it reveals issues from higher-level perspectives.

Many of the issues revealed are treated in a way that interests management rather than users. Pai and Huang (2011) point out some high level issues which include training, top-level organisational support, user participation as well as specialist skills and effective coordination of resources. “Khalifa and Alswailem (2015) point to strategic issues as being central to the successful management of HIS. Some issues revealed by use of TAM are ones that are meaningful for IT designers or suppliers; these include the availability and quality of information, training concerns as well as good interface design(Pai and Huang, 2011) or accessibility and availability of computer or laptop, acceptance and satisfaction among users and usability (Khalifa and Alswailem, 2015).

Some authors discuss issues of interest to researchers. Hsiao and Yang (2011) discuss the main trends within TAM, and mention issues that other authors in the same field discuss related to TAM. Holden and Karsh (2010) discuss issues like sample and settings, research models, relationships tested and construct operation.

In addition, the authors draw attention to issues mentioned by other scholars, such as nurses' preparation, coordination among departments evaluation on continuous supervising, and the acceptance of computers by nurses, and organization and management support. These are issues to do with implementing the system rather than using it.

When thinking about TAM's ability to reveal issues that are meaningful to users, we conclude that while TAM can indeed reveal issues that are relevant to users, but it tends to do so from a perspective that is meaningful to management, IT designers or suppliers, and researchers, rather than to end-users., The way that use of TAM reveals issues that are meaningful to users is usually by the researchers thinking out the external variables, which they then use in questionnaires to ask users. So, although the issues are meaningful to usage and users, they are issues that come from the researchers rather than from users themselves.

Some of the papers that use TAM classify issues. For example, in general IS, Yousfzai et al. (2007) classified 80 collected issues into four categories: organizational, system, personal and other characteristics. These categories are, however, from the perspective of the information system itself, rather than of the users.

In health care, Khalifa and Alswailem (2015) classify users into physicians, nurses, physiotherapists, technicians and administrative officers; but this is a classification of users and not of issues. They classify external variables, which are usage issues into general assessment, accessibility and availability, patient care, and user satisfaction, but they do this before carrying out the research in order to make their questionnaire more effective, and the categories do not emerge from issues revealed.

The use of TAM can encourage researchers to classify issues for the purposes of the research, but the categories tend to be general, shallow or obvious, and provide little insight into the down-to-earth issues of use. Moreover, they tend to be categories supplied by the researchers prior to the research, rather than emerging from information supplied by users. There is nothing in TAM that encourages researchers to classify the issues that are revealed from users during the research.

The use of TAM does not encourage researchers to uncover hidden issues nor reasons for the issues that are revealed. Though it encourages research to reveal issues related to users

around acceptance, satisfaction, resistance, training, design, etc., researchers do not uncover reasons for these. For example, Khalifa and Alswailem (2015) compare differences in satisfaction with the HIS between cohorts of user, but they do not uncover reasons for differences or similarities of level of satisfaction. There is nothing in TAM that encourages researchers to uncover what is hidden. We conclude that, of the three research needs, TAM can reveal but mainly at a high level perspective, can classify but only with obvious categories, and it cannot uncover reasons.

3.2.2 Actor Network Theory

The Actor Network Theory (ANT) was introduced by Latour (1987) in his book ‘Science and Action’ and has since been widely used in information systems, as well as in healthcare. It has been used to help in understanding and designing information systems and healthcare sector. This theory has been used to connect between human “health care users such as physicians, nurses, technicians, and etc” and non-human entities like “patient records, devices such as laptops, printers, monitoring screens” etc. (Dankert, 2011).

ANT constructs the relation between subject and object as an integrated network, and is based on the following concepts:

Network: The network is the framework that conceptualises human and technical devices that work hand in hand, not independently. The nodes in the network are the humans and devices, and the links indicate how they affect each other when working together. For example, the network for a hospital might include patients, physicians, nurses and patient records and an indication of how each affects the others.

Actants: A term used to refer to things that have effect in the network. They can be either human actors or non-human devices. For example the patient and the patient record file are both important Actants in the activity of the hospital, and both have effects. The hospital cannot deal with a patient without a patient file, and cannot deal with a patient file without a patient. When the patient is moved to another ward, the patient file must go with them. Hanseth (2004) illustrates the ANT concept of artefact in health care.

Symmetry: Humans and non-humans are treated equally. For example patients and patient information (either paper or electronic file) are treated equally, both in terms of importance and value.

Inscriptions: A process of creating technical artefacts that would ensure the protection of an actor's interests (Latour, 1992), for example the process and procedure for each department in healthcare organisation and how to apply them. Hanseth (2004) argued that in order to understand the technology, it is essential to understand the artefacts of the technology.

Delegations: Are the rules and responsibilities of actors in organisation or in the networking. E.g. the relationship among the healthcare providers in hospital, and their responsibilities toward the patient. Berg (1997), addressed the problems and applications of protocols or guidelines in medical work. These protocols are beneficial, and some problems/issues are also developed.

Durability: Assurance and monitoring process of the actors' performance. For example hospital monitors and measures the physicians' and nurses' performance according to the quality of services for patients through MR. Bloomfield (1991) used this element in his study to understand the role of IT in health care organization by using ANT concept of durability.

Translation: Is the mechanism (the process) of actors accepting ideas or projects. e.g. the acceptance for new ideas such as EMR in a hospital. Doolin (2004) used translation concept to understand the implementation Casemix in health care.

Black box: according to Latour (1987), "black boxing is the way scientific and technical work is made invisible by its own success". E.g. Lowe (2015) argued that black box would be represented when medical coding and DRG technology are implemented in the organization.

The main reason why ANT is of interest in this research is the concept of micro and macro. Macro issues are those that relate to the organisation as a whole, and are meaningful in terms of the organisation, while micro issues are those that are meaningful to the lower-level departments and the activities that go on there. For example, in a hospital, the hospital-wide policies and procedures are macro issues, while the procedures for the ICU (intensive care

unit) are micro issues. The job description of each nurse or physician is a micro issue, while the fact that job descriptions are required throughout the hospital is a macro issue. Issues that have been referred to as high-level in Chapter 2 are similar to macro issues, whilst those termed down-to-earth issues are similar to micro issues.

Many of ANT's concepts are meaningful from the micro perspective of users, and so might be useful to reveal, uncover or classify down-to-earth issues in EMR use. The symmetry concept in ANT, which treats users and devices equally, is similar to the situation in hospitals, where the hospital treats the patient and his medical record equally. The concept of network and Actants are meaningful to the hospital and health care users because Actants must work with each other e.g. patient communicates with nurses, nurses respond to him and physician communicates with patient and nurse, etc.

A number of authors have employed ANT in relation to discussing health records and other health information systems, in two main ways. One uses healthcare to improve ANT theory, which is mainly of interest of the researchers on ANT itself, using healthcare as a vehicle to discuss ANT. Cresswell (2011), for example, uses implementation and adoption of EMR to discuss five problems with ANT, with the end-goal of improvement in mind. This is of little interest here, because we want to be able to assess to what extent ANT can reveal down-to-earth issues, uncover hidden issues and reasons, and classify issues.

The second is useful in this research. Some articles have used elements of ANT to help understand, analyse health records or their use and place in the organisation. The main interest is in health records therefore, ANT is used as a tool. Usually, in such papers, ANT is taken as it is, rather than developed. In the following, papers that have used ANT in healthcare are reviewed; to assess the kinds of issues that ANT can reveal, uncover or classify down-to-earth issues.

On Revealing Issues

One great advantage of ANT is that it should be able to reveal both levels of issue, down-to-earth and high-level.

Some raise issues that are of interest for management. For example, Cresswell, et al (2011) discuss the availability and timeliness of the information, and importance of effective communication if improvements in clinical governance are to be attained. Lowe (2015), using ANT, discusses medical coding and acceptance of medical coding in the health reforms in New Zealand. Although Lowe mentions Down To Earth issues, these issues used to illustrate managerial perspective such as “introduce an accounting system in the changing organization”. Bloomfield (1991), using ANT, discuss how IT is important for the purpose of changing, strengthening and mediating the social reality of an organisation. They mention a few Down To Earth issues mentioned in e.g. page 717 “illegible note”, but these issues are used to illustrate managerial perspectives. Bloomfield (1995) discusses how ANT concepts like delegations of information technology, “improve the services to meet public needs, improve care, increase efficiency and raise effectiveness” and play a crucial role in management control and decision-making. Law and Singleton (2005) use ANT in discussing health records in alcoholic liver disease, and found out that, as this disease is a fatal disease and its treatment is too costly, there was need of certain kinds of intervention to handle the patients effectively.

Some issues revealed are of interest for IT developers and suppliers. For example, Ramiller (2006), within the context of ANT, mentions issues like "system as trainer" and discusses design of systems, including how their complexity can be overcome in behavioral health care. Bloomfield (1995) highlights issues meaningful for ICT suppliers and managers such as the relationship between technology and organizations, development, adoption and implementation of information technology, and its operation. Greenhalgh and Stones (2010) use ANT to discuss kinds of technical problems in the implementation of the IT programmed. Winthereik et al. (2015) discuss the process of (ANT) translation in relation to detection of a system bug. Ramiller's (2006) discussion of “system as trainer” is from an IT perspective.

A sizeable body of scholarly work has examined ANT however much of this has been done so from the perspective of researchers as opposed to users. For example, Ramiller (2006), using ANT as social theory and as a theoretical framework in health care; discuss designing and implementing the safety in health care systems, but they do so from the perspective of researchers rather than users. Berg, (1997), discuss standards, protocol, and guidelines as a research topic. Cresswell, et.al. (2011) use healthcare to identify and discuss problems with ANT, such as less attention on investigating the macro factors, too descriptive, and suggests

integrating ANT with other theories. Greenhalgh and Stones, (2010) discussed how ANT and structuration theory might be combined to assist the UK health services. Furthermore, Law and Singleton (2005) discuss the need for a method to study a messy object like alcoholic liver disease because there is different opinion from different perspectives.

Although, some papers mention meaningful, Down to Earth issues, which interest the users, such as “illegible note” (Bloomfield 1991), "summarizing data by hand" (Lowe 2015), or observation of daily work (Winthereik 2015) , most issues revealed when using ANT are of interest to management, IT developers and suppliers and researchers. Even the issues that seem meaningful for the users are used to illustrate managerial perspectives.

On Uncovering hidden issues and reasons

Although ANT reveals existing issues, it does not uncover to the reasons behind the issues. Law and Singleton (2005) reveal and identify the issues around alcoholic liver disease, they do not uncover the methodology. Most ANT elements cannot uncover hidden issues, even in principle. That said, the delegation concept might be able to uncover some issues e.g. in terms of rules and regulation for hospital, each department has its own rules so, applying this concept can for instance understand reasons for different levels of nurses' productivity and find out the way to increase it. However, most ANT concepts give no help with uncovering.

On Classification of issues

There is no evidence in any of the papers cited above, of ANT helping to classify issues that have been revealed as meaningful to EMR users. Hanseth (2004) illustrates the ANT concept of artefact in health care by stating the importance of actor-network theory in the field of information technology. However, he points out “ANT does not distinguish between or define a priori any kind of elements.”

Conclusion

To conclude, though ANT differentiates micro from macro issues, and may as a result have the capacity to recognise the difference between Down to Earth and high level issues, , it tends to reveal mostly high level issues. Moreover, ANT is not able to accurately classify Down To Earth issues nor does it demonstrate the ability to uncover hidden issues.

By using ANT tends to focus on the technical devices Actants rather than on the wider usage issues, e.g. authors observe the process of HIS users uses the devices, and especially how the screen responds to them. Many of these are Down to Earth issues but, these are the surface down-to-earth issues, and there is something deeper.

3.2.3 Information System Success Model

Information System Success Model (ISSM) is a theory undertaken by DeLone and McLean in 1992, and subsequently updated in 2003, to provide a comprehensive understanding of information systems' success. ISSM attempts to understand the success of systems through and explanation and identification of six key dimensions.

1-Information quality refers to any information stored, delivered or generated. It especially focused on the input information, such as accurate information for patients entered by the receptionist in hospital, and the ability to store, and retrieve the patient information in a proper search once it is needed by health care workers e.g. nurses or physicians.

2-System quality refers to the extent of the system itself and its ability to retain the information health care sector workers (physicians, nurses, technicians etc.), evaluate the system quality from their point of view. e.g. a nurse could find the system quality is perfect while physicians might find the system is complicated in terms of accessibility, finding patient information etc. For example a nurse responded regard the EMR “the system helps me to finish my tasks faster” (Tilahun and Fritz, 2015, p.5).

3-Services quality refers to quality of services the system is able to deliver that directly impacts users' intentions toward the system or users satisfaction. In hospital, each user has his/her own password to log in and access to request patient services, therefore some users might find the system is more friendly and easy to request services for patient while others find the opposite.

4-Usage intentions remain self-explanatory and related to intentions surrounding system use. Conventionally, users in health care prefer to participate and share their needs toward the system.

5-User satisfaction refer to the extent the users make use of the system. In hospitals, each user has different role in each speciality so, if the system meets the users need that enables them to use it regularly, they may be more likely to be satisfied with the system.

6-Net system benefits refer to (and include users intentions and satisfactions toward the system) the ability of the system to deliver the information.

To measure the success and in order to evaluate the system success such as EMR, IT people look at the system uses.

An evaluation of an EHR was carried out based on ISSM by Bossen et al, (2013). The authors applied ISSM as a conceptual framework within Danish hospitals to evaluate EH, shortly after implementation. Questionnaires were distributed to four groups of users (physician, nurses, physiotherapist and medical secretary); these user groups were selected as they were considered as central users of patient files with experience with EHR and operation reliability. So they could mention issues that were meaningful for them, including log-in provisions and system performance.

The authors point out evaluation immediately after EHR implementation is difficult but it was required and necessary to update the decision makers. According to the authors, ISSM is designed to evaluate overall design of EHR.

The authors applied four dimensions of ISSM to evaluate EHR- the quality of the actual system, in addition to service quality, use and information quality which relates to the extent to which data is robust and relevant to EHR". However, a few months before implementation high-level users were involve and had a positive impression regard EHR. The net benefit and intention to use were excluded in this evaluation.

This paper provides an example of how a comprehensive EHR can be evaluated shortly after implementation, describes system performance data and experience with EHR implementation, and identifies possible factors contribution to the relative success of implementation.

In addition it also brings to light issues which are likely to be of interest to ICT suppliers, including system performance, speed and ease of data entry, EHR content, software as well as system performance in general. As such, particular issues that stood out relate to the overall lack of functionality and speed, both of which left physicians and nurses feeling dissatisfied.

The data by physiotherapists were entered by them into the EHR, and therefore had no problems with updated data, whereas physicians depend on medical secretaries to transcribe their dictation into the EHR.

Returning to the six dimensions mentioned previously, issues relating to information quality that arose included the ease of which information was found in the EHR and the extent to which this information was easy to read and well-ordered. Information quality was further associated with the extent to which this was current and always updated as well as relevant to the user's work.

Issues in system quality was largely associated with log-ins- response times, ease of log-ins in addition to actual system use i.e. "EHR responds rapidly and satisfactorily when shifting between screens"

Service quality issues were reflected in the level of satisfaction expressed with the level of support received, shortly after implementation. Help functions and user guides also proved to be useful, thereby leaving users satisfied as far as service quality was concerned.

As far as issues of use were concerned, these included the perceived benefits of the EHR as the system enhanced and supported work procedures. EHR created new tasks relating to documentation however on the whole, made work easier.

Issues of expectations of future net benefit were positive as the benefits of HER to both patients and staff were acknowledged.

Interestingly, some of these are DTE issues but some are high-level issues. There seems to be no attempt to differentiate between these types of issues.

Tilahun and Fritz (2015) applied ISSM among five hospitals in Addis Ababa to examine users' intention and satisfaction to use EMR. The authors' discuss the satisfaction five factors for ISSM and replace the last factor with users' background instead of net benefits. They found EMR use in Ethiopian hospitals to be very low and there was dissatisfaction toward EMR; this was brought about by service quality issues, such as "system implementations, technical support, and training". The authors argued meaningful issues for the users related to a gap in understanding between IT support and users. As such, end-users felt that supervision from technical support was significantly lacking, coupled with inadequate training, time as well as lack of available hardware at the hospital.

Validation of DeLone and McLean ISSM was carried out by Adebowale, (2017) in the context of hospitals information system particularly in five teaching hospitals in Nigeria, a developing country. This study revealed the significant influence in five dimensions of ISSM but users' satisfaction did not majorly influence success. The authors discussed that it is important to measure the quality of a hospital system; so the system must be designed to be easy to use.

Tilahun and Fritz, (2015) point out ISSM based only on six factors, and there are many different factors "human or organisational" could be include to have complete picture to study EMR in terms of acceptance and system implementation.

A selection of studies attempted to apply ISSM to study the healthcare sector in closer detail, more specifically, the examined user intention and satisfaction where EMR was concerned.

A performance evaluation of public hospital information systems and ISSM was conducted by Cho et al, (2015). This study applied ISSM at three public hospitals in Korea to evaluate the system performance by comparing success factors before and after development of the system. The authors applied three dimensions of ISSM, intention to use, user satisfaction, and net benefit, to find out which relations seem significant between these factors.

Cho et al, (2015) conclude that hospitals should not focus only on the system and information quality, but also need to improve service quality in order to improve users satisfaction. As such, the authors mention a number of issues related to system quality, including privacy and security, interface design and the extent to which this was user friendly as well as response times. Information quality issues on the other hand included ease associated with accessing information and the extent to which medical records were 'complete'. Improved business processes as well as medical services were cited within the context of service quality issues whilst users placed value on system improvements upon the clinical environment and organisation as a whole. The latter two issues were those that related to intention to use and user satisfaction. Unsurprisingly, cost reductions relating to personnel and fewer errors ultimately contribute to net benefits within this context.

ISSM does not necessarily have the ability to bring to light hidden issues and those that are meaningful for users appear to be high level issues which it is able to classify to some extent.

Tilahun and Fritz (2015) classified the role of health care users "physicians, nurses", etc. and factors toward the system such as "users satisfaction, users intension"; though their classifications were very general. The authors concluded they were not able to classify the computer skills and experiences into ISSM.

3.3 Dooyeweerd's philosophy and Aspects

Dooyeweerd 1955 Magnum opus "a New Critique of Theoretical Thought" shows promise to provide a foundation for Down To Earth issues. This is because he starts from a perspective of everyday life.

3.3.1 Dooyeweerd's Aspects background

- Dooyeweerd is a Dutch philosopher. In 1920 he started studying the general history of philosophy, "to better understand the answers contemporary schools of philosophy of law were giving to the problems
- 1922 approx: 'discovery' of the idea of law-spheres of Aspects
- 1922-6: Worked at the Kuyper Institute, the idea of law-spheres came out while he was study and work at the same time.

- 1926: he worked as professor in Faculty of Law at the Vrije University, Amsterdam.
- 1926-35: Developing Dooyeweerd theory.
- 1935-6: Publication of first version of magnum opus *De Wijsbegeerte der Wetsidee*, 3 volumes.
- 1953-8: Publication of second version of magnum opus *A New Critique of Theoretical Thought* 4 volumes.

Dooyeweerd thought about an idea of aspects as spheres of meaning and law. It was because he believed in creation and the diversity of creations that led him to think about aspects. He had the idea of two sides subject- object side and law side as he believes in the law that governs the creation. Dooyeweerd believes that experience of everyday life is meaningful and everything is meaningful whether or not it is significant for us. p.32.

Moreover, Dooyeweerd felt most philosophies from early Greek thinking to the present day need reformation to deal with fundamental problems. Although philosophies try to understand the fundamental principles of all reality, most philosophies tend to take one aspect as the core foundation. Dooyeweerd believes this has prevented the emergence of a truly sensitive approach to understand everyday experience (Dooyeweerd1955, pp.1, 15) other reasons are not relevant to this research listed in Basden (2017, pp. 37-38).

3.3.2 Fifteen Aspects

Dooyeweerd suggested that there are, at least, fifteen diversified aspects, or ways of being meaningful, which one can utilise to look at reality. Dooyeweerd recognised the diversity of issues, including social, human, and non-human together. He identified fifteen aspects, which can be used to classify issues. These aspects might be useable by the researcher to seek hidden issues.

Dooyeweerd suggested that there are, at least, fifteen diversified aspects, or ways of being meaningful, which one can utilise to look at reality. Table 1 provides further insight into these. The first three aspects - quantitative, spatial and kinematic - are what Dooyeweerd called mathematical aspects. The next three - physical, and physical, bodily and sensory functions in humans biotic and psychic/sensitive - are pre-human aspects, in that they govern material, plants and animals. The next three - analytical, formative and lingual - are aspects of

individual, cognitive human life. The next three - social, economic and aesthetic - are organizational aspects of living together. The final three aspects - juridical, ethical and pistic/faith - are of global or societal significance.

It must be said that, Dooyeweerd's did not think of his suite of aspects as absolute, but rather as a proposal. However, Dooyeweerd's aspects have better coverage than alternative sets of aspects like Maslow's well-known hierarchy of needs (Maslow, 1943). Dooyeweerd's aspects are also sensitively informed by both historical, cross-cultural studies over the past 3000 years, and grounded in philosophy. An additional benefit of Dooyeweerd's aspects is that they are grasped by human intuition more readily than by theoretical thought and hence are very useful in analysis of people's everyday speech (Basden, 2008).

Dooyeweerd's aspects are spheres of meaning in which we function all the time, and simultaneously, without being aware of it. They are also distinct ways in which things are good or bad, so form a law-framework that enables the entire cosmos, including human activity, to be and occur. This implies they pertain across cultures and situations, and their meaning is grasped intuitively rather than theoretically, which in turn makes Dooyeweerd's aspects excellent for cross-cultural interpretive studies that need to be able to reveal diverse meanings.

The aspect table in the appendix gives the name for each aspect, with a brief statement of its kernel meaning. The second and third columns provide examples of functioning in life (both good and bad where appropriate) and of possible repercussions of such functioning (beneficial and detrimental). The Functioning column refers, in this research, to the agency of those involved with health records, and includes things like truth-saying or deceit (lingual aspect), while the Repercussions column includes likely results of such functioning in the situation of use. For convenience of the reader, the aspects are grouped in threes, though not all these groupings were recognised by Dooyeweerd's aspects.

3.3.3 Some Concepts Related to Aspects

Dooyeweerd's idea of aspects has some concepts that are relevant to this research, which expand on some of the points made above:

Functioning at the same time in all aspects simultaneously implies that human activity is multi aspectual functioning. This also implies a full set of meaningful issues in any human activity, that is, every aspect should be expected to be important.

Temporal reality has two sides: the subject-object side, which includes everything that exists, and a law side, which enables the subject-object side to happen. The law side consists of the laws of the aspects; each aspect has a different set of laws, e.g. laws of the lingual aspect enable language to function, and laws of the social aspect enable people to relate and work together and be polite with people.

The aspects are the same law side for all, they have the same meaning across all cultures. So the fifteen aspects would be in use worldwide, and there is no fundamental different in applying aspects in the UK or in any other countries such as Saudi Arabia. This also applies across different roles, such as physicians and nurses. It also applies between the researchers and interviewees.

That the meaning of aspects is understood by intuition implies that ordinary people can understand something of each aspect. Each aspect offers a different good and bad, for example in the social aspect, relationships, communication and working together are the good it offers, and no concern for relationships is the corresponding bad. These concepts help us understand Down To Earth and fulfill the research needs, as discussed below.

3.3.4 The uses of Dooyeweerd's Aspects in IS research

Dooyeweerd's ideas have been used by a number of IS researchers, thus highlighting the applicability of the philosophy to the present research. Several examples are mentioned here in order to show how they are applied to IS research and especially indicating how Dooyeweerd is able to reveal issues, uncover hidden issues and reasons, and classify issues. Eriksson (2001) used Dooyeweerd's Aspects to understand why an IT project failed and uncovered a number of issues that both the designer and management had overlooked. He discussed both Down To Earth issues and management issues but did not to seek distinguish them. This shows the ability of Dooyeweerd's aspects to reveal and uncover issues.

De Raadt (2001) used Multi-Modal Systems Method, which is based on Dooyeweerd's aspects, to study a small village in northern Sweden, to understand factors in its viability as a community. With the aid of a modified version of Dooyeweerd's aspects, factors important to

the life of the village were selected. Interviews were conducted, along with panels of community leaders, to discuss the life and threats to the village. These were classified using descriptions allied to seven of Dooyeweerd's aspects. When an excerpt was meaningful in two aspects, a link was noted between the aspects. The relationships were analysed to find out which factors contributed most to the vitality of the village.

De Raadt's study demonstrates the potential of Dooyeweerd's aspects to reveal and classify the main factors in a large body of data and understand the relationships between them. However, though this study collected many Down to Earth issues, these were not analysed as such, but were only used to form high-level abstract issues. This shows the ability of Dooyeweerd's aspects to reveal and classify issues.

Brandon and Lombardi (2005) applied Dooyeweerd's Aspects to understand sustainability of urban environments, which for them is when a community functions well in all aspects. This provides a way of analysing a wide variety of issues in urban environments; for example, transport is kinematic and economic and social aspects, and air quality is biotic and physical aspects. This shows the ability of Dooyeweerd's aspects to reveal issues in other fields.

Ahmad and Basden (2013) used Dooyeweerd's Aspects specifically to reveal Down To Earth issues in the mandatory uses of information system. They were able to not only reveal Down To Earth issues of a deep kind, but uncovered hidden issues and provided some classifications of issues. In this way they achieved the three criteria set out the end of chapter two. The method they used is the basis of the method used in this study.

3.4 Applying Dooyeweerd philosophy in this research

Dooyeweerd's aspects allow us to compare the discussion of issues in the literature with what users of EMR find meaningful. The significance of these aspects here lies in their ability to disclose a great deal of information about how entities fit within the context of everyday reality, as we experience it.

The following is a selection of small parts of the transcript.

Question: "Which is better to work on, the paper file or on the electronic file?"

Answer: "Both are good, but both must be correctly used, because I cannot tell you which is better, because this requires study". Therefore, in order to know which is better, we must do brain storming. And all concerned parties must meet to take such a decision and to take

the appropriate decision about which is better. I, on my own, cannot decide that, but there are some documentations that I can do for them minimizing and they become wireless."

In this study, aspectual analysis is used to identify what is meaningful to speaker or writer, by examining what they have spoken or written. It operates at several levels, as follows, using the excerpt above to illustrate these. The first issue in the excerpt is about correct use of whichever records system is in place ("Both are good, but both must be correctly used"), and correctness seems to what is of main importance to the speaker. So we may interpret this utterance as primarily meaningful in the juridical aspect. However, use as such is also meaningful in the formative aspect of achieving ends, so this would be mentioned too.

The second issue is about proper ways to come to a decision between electronic and paper records, and properness is also juridical, but two other aspects are important. The properness is a quality of the procedure for discussing, which is a lingual issue, and the aim is to come to a decision, which is an analytical issue. So such an aspectual analysis reveals two juridical issues, one formative, one lingual and one analytical issue. Some of these issues would not be obvious, and so aspectual analysis might be able to uncover hidden issues. These would be noted and classified by aspect along with others from other excerpts.

The transcripts from interviews and excerpts from the literature are analysed in such ways, so that comparisons could be made about what each cohort finds meaningful to write or talk about.

3.4.1 Understanding EMR uses by Dooyeweerd philosophy as multi aspectual functioning

EMR uses are multi aspectual functions and included all aspects therefore, for success all aspects have to be functioning well. Good EMR uses included all aspects e.g. keeping the patient files in nurses' station is spatial aspect, moving the patient from ward or room is kinematic aspect, dressing the patient is physical aspect, patients is functioning as biotic aspect, investigating patients' blood and diagnosing the patient, achieving or providing the services for patients is formative aspect, writing or entering patient information in EMR is lingual.

Communication related to patients between physicians and nurses, including matters relating to patient health and wellbeing is a social aspect. In addition, the number of days for patient stay in hospital is economic aspect, and the degree to which a patient responds to medical advice is an aesthetic aspect. Nurses providing services for the patient and fulfilling job duties effectively counts as a juridical aspect, whilst rules and regulations pertaining to each department has remain is an ethical aspect Finally, the act of a physician discharging a patient from hospital because patient health has improved is pistic aspect.

3.4.2 Understanding roles by aspects

Dooyeweerd calls it qualifying functions aspects, but it is very important to success uses included all fifteen aspects.

In each role one or two aspects are most important in defining the role.

High-level approaches included one or few aspects meaningful imply many aspects are ignored. E.g. in management all aspects are included such as technology, time, resources, patients, EMR, system rules and etc but managers interest in time and resources and ignored the others issues because they are not meaningful for them. This is referred to as narrowing aspects.

Managers are qualified by one or few aspects e.g. manager is functioning with limited aspects such as economic aspect, usually economic issues are meaningful for manager such as budget, resources, time and etc. in narrow range of aspects. While the role of researchers is analytical and what the researchers' interest in one aspect or few aspects e.g. patient safety is meaningful issues for researchers that is juridical aspect, the role of ICT suppliers and developers is functioning formatively and their interest in designing hospital system that is lingual aspects.

Within Down To Earth approach all aspects are meaningful, issues are meaningful in main aspects and other functioning very much limited aspects. Therefore, success uses interest in all aspects such as time patient devices, EMR, patient service, and etc.

3.4.3 Reconsidering the different between high and DTE issues and perspective

Dooyeweerd's Aspects promise to classify high level and DTE issues, by looking at the meaningful issues for managers, ICT suppliers and researchers whatever seems of interest for

them. To some extents it might seem high level for users such as nurses and physicians, section 2.6.3 in chapter 2 discusses the need to classify high level and DTE; issues that would otherwise be considered as meaningful by users, may be ignored and regarded as insignificant by managers. So that is not fully satisfactory because of shared issues between users and managers. Shared issues is the issues looked at from two different perspectives e.g. time for manager is different for nurses

DTE and high-level perspectives as on the basis of to whom the issues are of interest, which is not fully satisfactory because of shared issues are looked at from two different perspectives. Dooyeweerd offers a better understanding of the difference between them. It is not a matter of different issues, but a matter of perspective. Nurses, technician and other health care givers have an interest in many issues such as patient, time but from different perspective e.g. time with patient and time to write and Dooyeweerd's Aspects perspective is that every aspect is important, moreover, aspects enable to differentiate between high level and Down To Earth perspective.

High-level included limited numbers in narrowing range of aspects that are meaningful for managers and ICT suppliers and researchers e.g. managers interest in time, budget or any issues related to the hospital management, ICT supplier interest in system infrastructures, screen, devices and any issues related to the hospital system. While the Down To Earth perspective is that every aspect is important and thus ensures that these are included. It is many because EMR use as multi-aspectual functioning involves every aspect, and because success depends on every aspect, not just a few. Which remain meaningful for the users in wide range of aspects, such as entering patient information in EMR by nurses etc. However, each user has unique aspectual profile, e.g. nurses in the same ward have different meaningful issues. Therefore, by looking at the number of aspects interest for these two phases (high level and Down To Earth) we will be able to recognize the different between high level and Down To Earth perspective. High-level perspective is narrow because it's focusing on the aspect of the role.

3.5 Fulfilling research needs by using Dooyeweerd's Aspects

Dooyeweerd's aspects can be used as a conceptual tool to uncover hidden issues and classify the meaningful issues in high-level issues as well as in Down To Earth issues.

Reveal:

Applying the fifteen Dooyeweerd's Aspects can help to reveal the issues that are meaningful for the users. Analysis by aspects can reveal issues. EMR uses are multi aspectual covering all aspects; therefore use of aspects to analyse a range of excerpts can reveal a multitude of issues.

Uncover hidden issues:

For Dooyeweerd, aspectual law is the reason why things happen. Therefore awareness of the law of different aspects helps to uncover hidden issues and the motivations behind specific occurrences e.g. each user has different reasons or employs a different technique to use EMR, and these reasons are meaningful in different aspects.

Classify:

The fifteen aspects already provide classification. That enables us to classify the meaningful issues, which can contextualise EMR uses, as well as used to classify the weakness and strength of EMR uses, so as to resolve them. Classification can also be useful in design or redesign of EMR. Also aspects could be used classify the issues of daily uses and issues in literature.

3.6 Challenging of Dooyeweerd's Aspects

If two researchers have no experience in the healthcare sector, their aspectual profile is likely to be the same. That said however, if one of these researchers has experience in the healthcare sector, the results for his/her research might be different because experience affects the results not the tool (Dooyeweerd's Aspect) itself.

3.7 Conclusion

Dooyeweerd's Aspects can provide an understanding of EMR use and thus can potentially fulfill the needs of the present research. As such, therefore it will be used in this research.

CHAPTER FOUR: Research Methods

4.1 Introduction

The research needs to obtain Down to Earth issues from a variety of health records users. The following chapter discusses research methods and manner in which this can be achieved.

Guided by Saunders, Lewis, & Thornhill's (2003) framework, the research onion, this chapter discusses and justifies the research paradigm, research approach and design strategy as well as the overall research methods. Finally, the present study is discussed. The overarching research principles of the present study are guided by the work of Klein and Myers (1999).

4.2 Research Paradigms

There are three major research paradigms within information systems research namely, critical research, positivism and interpretivism (Orlikowski and Baroudi, 1991; Weaver and Olson, 2006). Results and outcomes of these approaches or philosophies can vary. Said research paradigms govern scholarly work and the techniques and methods they employ as part of a study (Denzin & Lincon, 2009).

The general aim of Positivist research is to test a set of hypotheses (Klein and Myers 1999). However, this piece of research does not focus on the testing (through confirmation or rejection) of any set of hypotheses and instead seeks to gain an insight into Down to Earth issues.

Positive research tends to involve formal propositions, while MR is not a formal proposition with each MR user having or being involved in different roles within MR. Furthermore, positivist research involves the general reasoning from sample to population. However, this research looks for the differences between cohorts.

Positivist research assumes a physical and social world that exists independently of human beings (Orlikowski and Baroudi, 1991). In contrast. This piece of research looks for insights and understanding into meaningful issues of MR users. Positivist research assumes that understanding and measuring the nature of the world is unproblematic. This research looks

for the Down to Earth issues that are complicated and are often hidden. Therefore the Positivist paradigm is deemed unsuitable for this research.

Critical research on the other hand aims to emancipate marginalised and alienated strata of society (Klein and Myers, 1999). This research is moderately critical in that it hopes to deliver EMR uses from the dominance of managerial thinking, yet the main aim is to find out how to reveal, uncover and classify Down to Earth issues.

Interpretive research aims to gain insights and develop a depth of both knowledge and understanding within any given research domain. This research aims to gain insights into DTE issues of MR uses, and how to study them. Interpretive research involves meaning and in keeping with the present study, seeks to gain new insights and understanding into the research domain (in question) through careful examination and consideration, ultimately providing a rich, detailed view of the research sphere (Klein and Myers 1999). This research looks for the meaningful issues of MR users. Interpretive research does not predefine variables, although it may seem as if Dooyeweerd's Aspects involve predefinitions these are still not variables; in this research the interview is not arranged or dictated by Aspects.

Interpretive research focuses on the complexity of human sense making. This research aims to uncover multiple meanings, Down to Earth issues and hidden issues. Interpretive research tries to understand the contextual setting of Information Systems (Orlikowski and Baroudi, 1991). This research tries to understand the context of MR.

In light of the above, it is deemed that an interpretive lens would be most suitable to the aims and objectives of the present study. Now the chapter shall discuss how the present research adheres to Klein and Myers (1999) principles of interpretive field studies.

4.3 A Set of Principles for Interpretive Field Research

Klein and Myers (1999) identify and present seven basic principles to guide an interpretive methodology when conducting academic research. According to Klein and Myers (1999), the foundation for their defined set of principles is derived from two basic sources, anthropological research and hermeneutics. The current research applied these set of principles, because:

1-This research uses interpretive research to gain insight into MR and into how Dooyeweerd's Aspects can help reveal, uncover, and classify issues. The current research also concerns the participants within an interpretive methodology.

2- Klein and Myers (1999) principles are for research involving Information Systems. This research explores t MR uses to critically discern various issues in MR use, be it either high (level) or Down to Earth issues. Each principle is linked to the research as follows:

4.3.1 The Fundamental Principle of the Hermeneutic Circle

The crux of hermeneutic principles, according to Klein and Myers (1999), is that while considering human understanding both the basic parts/fundamental fragments and the result of these parts and fragments should be understood and interpreted in terms of the whole, and vice versa. This principle is regarded as the core of human understanding in relation to all other principles. To substantiate their argument, Klein and Myers (1999) have cited the work of Lee (1994), in which they interpret a global context based on the individual emails thereby implying the importance of interpreting both parts and whole. As part of this study, the researcher has applied the same principle by interpreting both parts as in the Aspects and the whole as in the outcome based on these Aspects.

As part of the current study, the 'whole' is based upon the researcher's own understanding of Down to Earth issues, including the researcher's previous experience(s), the part are the individual down to earth issues discovered by analysis. The researcher's respective whole understanding helped in the analysis of the excerpts, for example, receiving patients in the ward comes before receiving patient files. Conversely, by using Aspects a much richer picture of EMR use is gained.

The researcher applied this principle to the interviews by incorporating different aspects like mathematical, pre-human, human, social, and societal aspects into the interview to develop a holistic view into the uses of EMR via text excerpts from the interview; in addition, the author has also concentrated on the overall outcome of the interview inclusive of the aspects under consideration.

Furthermore as part of in this study, Dooyeweerd's (1955) Aspects are considered for the subject of interest i.e. to analyse EMR. These aspects are explained individually to eventually

discuss the problems pertaining to EMR. Fifteen different aspects are incorporated as part of the study. These aspects are discussed independently in the spirit of the hermeneutic circle for the analysis in order to discern the issues that are prevalent within EMR in Saudi Arabian hospitals.

4.3.2 The Contextualisation Principle

According to Klein and Myers (1999), the contextualisation principle refers to the background knowledge of the subject under investigation from a historical perspective, in order to give the reader an insight into the need for investigating the situation at hand. The purpose of this principle is to substantially enhance the rigour of the interpretive research by providing the context in terms of both the researchers and participants (O'hEocha et al., 2012). This essentially means that the historical context incorporates the aspects from all dimensions, which include the situation itself, researchers, and the participants. In this study, the historical context includes when each hospital started using electronic records and the fact that the researcher used to work at one of the hospitals. (See above) The culture context includes the mix of Saudi and non-Saudi (foreigners) staff, staff background and the religious situation; especially Islamic, with Mecca being the primary holy city in Islam. This context effected the interviews in the sense that for example, the researcher was able to understand that her ex-colleague did things in different way albeit incorrect, whilst the researcher knew of more viable alternatives. During analysis the researcher's knowledge of the context helped deduce some meaningful issues.

4.3.3 The Principle of Interaction between Researchers and the Subjects

This principle is based on the premise of critical reflection originates from the researchers and participants' interaction with each other (Klein and Myers, 1999). It implies that the discussion of the research material requires in depth reflection of the researchers and participants based on these interactions, as the results of the interpretive research can be affected by the interactions between researchers and participants.

This principle could be seen operating in this study when some interviewees came to understand the purpose of study was research and not assessment. As a result they felt it was easier to communicate with more meaningful information.

In addition, while discussing the aspects elicited from Dooyeweerd (1955) work, it is obvious that the researcher and the participants had some preoccupations pertinent to these aspects.

This principle was employed to analyse and question the aspects and empirical data results based on the interactions between the researcher and participants. To avoid or minimise the element of bias, the previous principle of educating and informing the participants on the issue was employed. The participants were given the opportunity to observe a clear picture of the whole scenario. However, as mentioned earlier, with the prior knowledge on the subject of interest and the existing professional circumstances and experiences of the participants, the element of bias could not be rooted out completely.

4.3.4 The Principle of Abstraction and Generalisation

The principles or processes of abstraction and generalisation refer to the practical implication of theory and the resultant human understanding (Klein and Myers, 1999). These processes tells us that interpretative research should abstract issues from data and generalise from these issues.

In this study there were two types of abstractions. First was the grouping of the issues using conventional methods? The second was to use aspects to discover the ways in which what was said by the interviews was meaningful to them.

This process helped in familiarising the participants with the theory first. They were given a rough idea of what the researcher wanted to measure in theory. Second, this process also helped in assessing whether the issues that are related to EMR in general and specifically in the context of Saudi Arabia are related to what has been discussed in the literature or not. Furthermore, it was also discovered that in some cases, there was lack on congruence in the personal diversity of understanding and interpretation of the participants versus the assigned aspects of the researcher.

4.3.5 The Principle of Dialogical Reasoning

This principle or process “requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings (“the story which the data tells”) with subsequent cycles of revision.” This refers to the process of evolution relating to preconceptions and understanding and the position of a researcher, which draws his/her attention to such evolution with increasing levels of empirical evidence (data).

The researcher began the research with two main theoretical beliefs. One was that electronic records are always better. It was learned from the interviews that this is not always so. The second was Dooyeweerd's Aspects are good tools for analysis and this has been confirmed. This principle helped in the process of testing and re-testing the aspects and definitions under investigation related to EMR. This /process further aided in multi-dimensional and diverse interpretation by allowing for clear space for evolving thoughts of the participants related to the pertinent issues in EMR. In addition, this principle aided in overcoming the diversity and complexity of the undertaken research, with the literature review of this study was aimed at simplifying the complexities. However, it is noted that the discrete principle of Dooyeweerd's Aspects were found to have overlaps in this study depending upon the participants and nature of the aspects addressed.

4.3.6 The Principle of Multiple Interpretations

This principle is based on the premise that there is a possibility that the same sequence of events are interpreted differently by different people, thereby creating multiple interpretations. According to Klein and Myers (1999), this principle "requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study."

The human mind works differently and every individual is unique in their own way. There is a chance of there being different views regarding the same event. This principle helped in assessing different views of participants on the issue of EMR, which resulted in multiple interpretations. The multiple interpretations not only generated diversity in the respective opinions but also at some points these multiple opinions contradicted one another, which was mainly based on participants education level, rank, and experience of the participants. This issue helped in understanding the aspects from different perspectives based on the knowledge and hierarchical level of the participants.

It is worth mentioning that this principle was seen in this demonstrated when nurses from different hospitals communicated contradictory information. For example there were different opinions on whether to keep patient files with the patients or in the nurses' office. In another hospital, consultant and nurses disagree who should have entered medication information into the record(s). Dooyeweerd's Aspects helped these multiple interpretations

4.3.7 The Principle of Suspicion

According to Klein and Myers (1999) this principle “requires sensitivity to possible “biases” and systematic “distortions” in the narratives and collected from the participants.” This principle took the methodology further in order to question the contextual, official, and mental situation of the participants. In addition, this process also supported the analysis in terms of determining the bias of the participants and the researcher as well by questioning the reasons for different views and challenging them logically.

Some interviewees gave brief diplomatic answers and so the researcher had to read between the lines. Others, in their answers, tried to send indirect messages about their respective organisation(s). Dooweryeed helped the researcher in clarifying what was meaningful in their messages.

4.3.8 Overview

The research follows an interpretive approach to gain insight into t meaningful issues as Klein and Myers (1999) do in their information systems research. The seven principles have been applied to this research to emphasise the meaningful issues within both high and low level issues and to shine a light on how MR is used.

4.4 Research Approach

This research is interpretive in nature and uses both quantitative and qualitative method.

The researcher extracted the meaningful issues that are of interest for MR use, which are referred to as DTE issues by Ahmad and Basden (2013). Following that tables have been created to count the number of issues for both literature and users, before converting these tables into bar charts. Although quantitative is a term used to describe numbers and figures to count the number of issues, here patterns are examined rather than exact figures, in order to develop insights in. and a deep knowledge of, the research domain.

However, the researcher found quantitative was not enough and there is a need for qualitative method to gain insight into the reasons behind each issue. Qualitative approach guides the principal of collecting subjective information. This method also requires the principles that all aspects, views and constructs should be obtained to make the analysis.

4.5 Research strategy

This research uses an aspectual analysis of text to investigate the literature and interviews in order to investigate users. The methodology employs an everyday setting of MR use to collect data about real life experiences regarding the impact of newly introduced EMR systems and procedures (Galliers & Leidner, 2014ⁱ).

4.6 Research Method

The research method under the interpretive paradigm is flexible and offers in-depth understanding of the phenomena under investigation. The most widely adopted qualitative research methods are interviews, focus groups and observation (Merriam, 2014). The question of which type of research method should be adopted is based on research questions to which the research must respond. The aim of the empirical research is to find Down to Earth issues of using medical record systems. Human beings use the systems and it is human beings who can respond to the real impact of the systems.

4.6.1 Why Open Interviews

This research could not use questionnaires, surveys or structured interviews. Questioners usually seek short answers. Surveys would not be able to classify the issues. Surveys include space for the interviewees to say their answers or write down any further details, most of them prefer to leave the space empty or incomplete.

This research does not use the case study method as the case study would not be able to reveal the varieties of issues such as nationalities, different specialities and etc. Case study allows studying one or two organizations; that means case studies are able to reveal issues but cannot uncover hidden issues quite as well.

This research does not use action research, as it does not look to change the current situation of MR use. Furthermore, this research does not use archival research as the archival research is used for dealing with documents and looking to the past while this research is looking to the future of MR use and how people change their behaviour and interest, as well as health care givers needs from MR.

This research does not apply ethnography as ethnography looks at history while this research gives the interviewees opportunity to express their needs and opinions, as the researcher has

experience as a medical records technician that enables her to understand and deduce without studying cultural history formally.

Structured interviews would not be able to reveal Down To Earth issues or uncover hidden ones.

However, open interviews can encourage interviewees to express their thoughts without limitation.

The current research employed open interviews to gain in-depth understanding of the phenomena under study. Unstructured interviews are used to disclose Down to Earth issues regarding use of medical records systems.

As part of these interviews, the interviewer asks a few opening pre-planned questions about the processes and interviewee respond accordingly (Richards, 2014). The open-ended interview term is used due to the fact that interviewees feel free to express what is meaningful to them rather than what is meaningful to the interviewer.

4.6.2 The style of open interview

The current research adopted the informal type of interviewing in order to ask questions about the use of electronic medical records. Initial questions were prepared in terms of social and job issues. The rest of interview questions remained open in nature. The researcher kept the aspects at the back of her mind, such as ethical, aesthetic, social, formative, sensitive, physical and spatial, to try to cover them all during the duration of the entire interviews.

The social and ethical aspects in the Saudi Arabian context might be different compared to a western context. Furthermore, the formative and physical aspects are also divergent to a large extent in comparison to a western context. Therefore, the response from the participants should be varied and raise different notions about the impact and effect of electronic medical records. In that sense, all the questions responded to, included all the aspects, which have a potential effect on the adoptability of EMR.

4.7 The Actual Study

This research:

- Interviews MR users and analyses the transcripts using Dooyeweerd's Aspects to reveal DTE issues (Chapter 5).
- Compares users DTE issues among four hospitals (Chapter 6)
- Compares DTE issues between paper and electronic medical record users (Chapter 6).
- Compares DTE issues between nurses and other MR users.
- Compare DTE issues by nationalities.
- Analyses selected papers using Dooyeweerd Aspects to reveal authors DTE issues and compares DTE issues of interest to users and authors. (Chapter 7)

4.7.1 Selection of Hospitals for the Empirical Study

Interviews were conducted across four hospitals. In some hospitals some EMR was in place while others still used paper records and some hospitals used both. Four hospitals have been selected for the particular study in Saudi Arabia. Initially it was investigated that either the hospitals have recently implemented EMR systems or not. The hospitals, which had recently adopted electronic medical records, had been selected as suitable sites for this research.

The first hospital was Al-Noor hospital classified as a tertiary hospital with 550 beds capacity, located in Mecca's western area in Saudi Arabia. Only Muslims were allowed to work in or be patients in this hospital. Twenty medical record technicians and eighteen nurses from different departments were interviewed.

The fourth hospital was King Faisal hospital located in the same city of Mecca. It is considered as a secondary hospital with two hundred beds capacity. Usually this hospital treated referral patients from prison. Two physicians, five medical records technician and two nurses were interviewed. They were agreeable and gave open answers. This hospital still used paper patient files but were adopting electronic systems in the apparent near future. In this respect, the second hospital was King Abdul-Aziz also located in the city of Mecca. It was similar to King Faisal hospital but the majority of patients were referred from villages. It experience sheer overload during pilgrimage seasons. The head of the medical record department and the head of the IT department were interviewed. In addition, three medical record technicians and three nurses were interviewed, but no physicians were available to interview. This hospital had a plan for using electronic medical records shortly. As far as hospital three is concerned, Hera hospital, located outside Mecca. It is a secondary hospital with 350 bed capacity. Most of the employees are of nationalities and include non-Muslims and a variety of backgrounds. This hospital is in competition with the Al-Noor specialist

hospital. Both of them have been using electronic patient files and had applied for a “JCIA” (Joint Commission International Accreditation). Some developments occur in this hospital of particular interest. Twelve medical records technicians, five nurses, two physicians both of whom were assigned in the Intensive Care Unit and the head of the IT department were all interviewed. All of them were agreeable and gave open answers. They were looking forward to more improvement in electronic medical records and were optimistic.

The benefit of selecting two different types of hospitals includes the fact that hospital 1 and 3 were using EMR and hospital 2 and 4 were using paper records. In that sense, this selection helps to understand the variety of health care cultures, as well as allowing the identification of meaningful issues in paper records based hospitals that can be taken into consideration in EMR in order to help to transition from paper to EMR.

Although, hospital 1 and 3 use EMR, they were still running paper records, there was a need to explore the meaningful issues among the users by interviewing many different roles for users and applying Dooyeweerd's Aspects to determine the EMR uses and understand the distinction between the use of paper based records and EMR.

Hospitals 2 and 4 used paper records but were looking forward to the adoption of EMR, therefore, there was a need for comparison between these four hospitals.

Data collection started first with Al-Noor hospital for the following reasons; the researcher worked at this hospital from 2005 to 2008, so was known to many of the staff. This helped the researcher to contact people in the hospital and gain access. This hospital was already using both paper and electronic records so the researcher could gain experience of both paper and electronic records, which could be used when visiting other hospitals.

The following table summarises the interviews. The first column indicates the name of each hospital, the second column presents the number of nurses, the third column shows the number of physicians, the fourth column shows the numbers of medical record technicians, with the last column showing the numbers of heads of department, either manual or electronic based.

Hospital No.	No of nurse	No. Physician	No. Technicians	No. HOD
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H.1	18	None	20	None
H.2	2	2	5	None
H.3	3	None	3	2 (one Medical record dept. and one of IT dept.)
H.4	5	2	12	None
TOTAL	28	4	40	2

Table 4-1 Roles of users

4.7.2 Selection of interviewees

A pilot interview was carried out in one of the selected hospitals in order to determine how to go about developing and asking the questions. Due to the fact that this was where the researcher used to work, she discovered some interviewees feared that she was assessing them and thus divided themselves into three groups. One group were positive and gave more information than the researcher was expecting, while the second group gave limited and little information and the third group giving normal answers. There was also a fourth group (see below). Some former colleagues preferred not to be interviewed by the researcher.

The sample was selected on the basis of their substantive knowledge about newly implemented electronic medical records systems in the respective hospitals.

The non-Saudi (foreigners) interviewees were from the Philippines and India and were under threat of losing their jobs and feared that the interviews were part of that process.

For the interviews that took place in Mecca part of which is exclusive to Muslims, those who were not Muslims could not have as much interaction with colleagues in other hospitals. However those interviewees had more experience in using electronic records.

4.7.3 Interviews

The aim of the interviews was to discover the kinds of down-to-earth issues that relate to using medical/health records of either type, in order to disclose what is important in such use so that such issues can be taken into account in any transition to EMR. The purpose was to identify the significant hidden issues that could be taken into account as part of EMR implementation.

In that respect the interviews were largely open with some direction to keep the conversation around the issue of health records. The unit of analysis incorporated in the current research stream is the hospitals' personnel. Participants were asked to respond about the impact of EMR systems as compared to the traditional file system. The average duration of the interviews was between 20 to 30 minutes.

The issues of confidentiality and ethical consideration were taken into account. A formal informed consent was obtained from each participant to record the interview digitally; see Appendix 3. The interview started with an explanation of the main objectives of the particular study. The participants' consent had been taken and they were assured that his or her information would only be used for the particular research and not be used for other purposes. The findings of the study would also be shared with the participants if they wished. The questions asked were to gain an in-depth insight into the phenomena under investigation. The participants' response was recorded carefully and sticky notes have also been taken while interviewing each respondent.

4.7.4 Structure of Interview

The process of the interviews included the following steps:

- The researcher started the interview by asking the interviewees preliminary questions e.g. greeting, asking names, etc.
- The interviewees were provided with the participation sheet (see Appendix 3), - and explained to as to what the purpose of the study entailed. Participants were then given the consent forms to read, - to be sure they understood it. They were asked if they had any questions, then asked to sign it (the sheet) and return them back to the researcher.
- Each interview started by asking about their job description and experience in terms of years.
- Details of each interview in the middle (the main part of the interview) consisted of open questions - each question making use of previous answers. Each interviewee was questioned in detail by asking why, in terms of using the interrogative form to elicit information. As some interviewees did not speak English, it was decided that interviewing them in Arabic would be the best course of action; those that were proficient in English were interviewed in English.
- At the end the interviewees were asked their opinion of the advantages and disadvantages of EMR.

4.7.5 Four Types of Interviewee

Four groups were found, which gave different types of information.

Group A

Group A consists of those who knew and had worked with the researcher. They agreed to have an interview and were open with their answers, here is an example asking one technician about job description.

“Question: why do you prefer Health Information System?

Answer: Because. It’s easily accessible and can limit the time lost in paper work. We can focus more on patient care, the bed side care of the patient. Rather than filling up forms.

Question: is there any disadvantage of HIS?

Answer: there is no disadvantage”

Some of them prefer not to say or to be diplomatic. Also some of them explained their task usually by this

Finally, at the end, they were asked about advantages /disadvantages of paper and electronic files

Question: “According to your experience, do you prefer to use paper records or electronic records?

Answer: I prefer using the adjustable system. As for the electronic records, I do not have enough experience with that, but I think that when a fault occurs in the electronic records, then it is difficult to retrieve the data”

This group was friendly, appreciating that they had been interviewed. They expected more development in electronic patient file in order to make their work faster and easier.

Group B.

This group just gave minimum answers, e.g. listing the requirement tasks they usually performed on a daily basis. At the end, I asked them the advantage / disadvantage of EMR but there were no more answers e.g.

Question: “What is the process of extracting files from the shelves?

Answer: At first, they print for us the appointments belonging to out-patient and quality reviewer from system, after that we take them and save them on the computer again, and then we extract and arrange the files for each clinic, then the nurses come and take them.

Question: How many files do you extract daily?

Answer: Nearly 200 files.

Question: How much time do you need to extract 200 files a day?

Answer: About 6 hours and then writing (NA).”

Most transcripts of group B were excluded from this study because the information in them was regarded by the researcher as being non-meaningful.

Group C.

Non-Saudi or foreigners will be replaced due the ‘Saudization’ decision. Unfortunately groups of non-Saudis (foreigners) technicians will be terminated, so they thought I was there to evaluate or assess them. They gave open and detailed answers.

“Question: Can you tell me your job description and your routine work?

Answer: I am a medical record, and used to be a ward clerk. My job description is that I am a medical record and a transcriptionist. I type the discharge summary of all patients, which is written by physicians, and correct the grammar. I also book appointments of patients and some ad-hoc work. I also keep the files confidential between physicians and myself. I also used to deal with lab requests and investigations such as diagnosing the case of patients, keep patients in proper beds and to ensure with the consultant that the patient is under care with him. Receive calls from other departments, book patients and etc”.

I believe this group was seeking appreciation for their hard work.

Group D.

In this group of technicians, most of them didn’t know the researcher because they joined work after she left. They agreed to have an interview but they refused in an indirect way. They assumed the researcher would be tough, so they hesitated to be interviewed e.g. gave excuse to postpone the interview.

Question: Why does the nurse write the nurses note in a form of a story?

Answer: its mean explain the details of the patient's condition written in a form of a story. I already told you that lack of improvement and development caused shortage and the absence of update. Documentation that is particular for nurse is supposed to developed and updated by the ministry because since 8 years ago nothing has changed and never developed. And when we ask for position paper, especially the nurse that makes the position of the patient. Also, as for the emergency nurses' note, we still update them through personal efforts from emergency management.

I used the same technique used when analysing the previous hospital above.

There were two visits to Saudi Arabia were for the purpose of conducting interviews; the first of these visits focused only on the Al-Noor hospital, and the second visit was distributed among the three remaining hospitals.

4.8 Data Analysis

The transcription process is a pivotal component in qualitative research and data analysis (Cassell, 2007; Penny, 2004). The first step was to transcribe the recorded interviews carefully and correctly. Just over half of the interviews were in Arabic and the researcher translated them to English during transcription. After transcribing the text was entered into EXCEL for ease.

Please see Chapter 5 for a description of how the interview transcripts was carried out.

The effect of researcher experience on interviewing and analysis will be discussed in chapter.7.

4.9 Ethical Approval

In this study, users of MR were interviewed to discover the issues that really interested them, and these are compared with those found in the literature. Prior ethical approval was obtained, and the interviewees were provided with an information sheet, asked to sign a consent form and it was made clear that they could withdraw from the interviews at any time and for any reason. These are provided in Appendix 3.

CHAPTER FIVE: Results from Aspectual Interpretation of Interviews

5.1 Introduction

This chapter provides an in-depth aspectual analysis of the interview results. Qualitative and quantitative analyses have been applied for this research. The purpose of the analysis is to evaluate the different aspects of what has been said by interviewees. Later, this will allow the researcher to assess the extent to which Dooyeweerd's aspects can help reveal Down to Earth issues, classify them, and uncover hidden issues, which are the three activities required as identified at the end of Chapter 2. Based on the interview transcripts, various aspects related to the hidden issues are examined. The method, in keeping with Ahmad and Basden (2013), seeks to discover, from within the respondent's answer to the researcher's question, what the healthcare giver on the ground finds meaningful.

5.2 Description of Analysis of Interview Results

The following is the description of the method used when analysing interview results. The interviews were transcribed from the original language (Arabic) into English phrases. The following is a selection of small parts of the transcript, to demonstrate the method by which down-to-earth analysis using aspects is carried out.

Question: "Which is better to work on, the paper file or on the electronic file?"

Answer: "Both are good, but both must be correctly used, Because, I cannot tell you which is better, because this requires study. Therefore, in order to know which is better, we must do brain storming. And all concerned parties must meet to take such a decision and to take the appropriate decision about which is better. I, on my own, cannot decide that, but there are some documentations that I can do for them minimizing and they become wireless."

Here the interviewee does not directly answer the question, but instead stresses that:

- Correct use of whatever EMR system is in place is the important thing, and by implication is more important than whether it is paper or electronic records
- To get a good quality answer to the interviewer's question, a proper process of analysis and decision needs to be undertaken.

In most cases, the respondent goes beyond merely answering the question to bring in other material that is meaningful to them. These take the form of asides, additional information that is volunteered, or when instead of answering the question the interviewee talks about other

things, perhaps only loosely related to the question. Sometimes they may grumble about something whilst at other times branch off onto other matters that occur to them while speaking. So, in the analysis below, these 'multiple extras' are differentiated from direct answers to questions.

5.2.1 Selection of Excerpts

The transcripts of the interviews were read numerous times as suggested by Miles and Huberman (1994).

Excerpts were selected from the transcripts for following criteria:

- Answers contain down to earth issues about the uses of Electronic/ Paper medical records.
- Each type of healthcare worker has a different perspective, and therefore a different set of meaningful issues. Therefore, excerpts had taken from nurses, physicians, medical records technician, coders, and an administrative officer and IT technicians.
- Excluded excerpts which contain only high-level issues.
- Excluded excerpts that are only with brief summary and giving little meaningful information e.g. one of the users has been asked how do she extract the patient records? She answered, "Just pull out from the shelf".

Thirty-eight excerpts were used and analysed by applying aspects.

5.2.2 Extracting Issues from excerpts by aspectual analysis

The interviews were transcribed or translated by the researcher, into an MSWord document containing all the interviews/data collected. The text was then split up into small excerpts in an Excel file. Of those interviews that yielded useful material (a few were pedestrian and did not add anything significant, as in the example above), the excerpts were analysed to find issues relevant to EMR uses that were meaningful to the interviewees. One way of detecting these is to focus on those parts of an interviewee's conversation that are not directly answering the interviewer's Questions; see above.

The excerpts were analysed using Dooyeweerd's aspects to identify the issues that were meaningful in them, by identifying which aspect(s) make them meaningful. Here is an example, from the analysis below:

Question, "What if the nurse forgets to write things down"

A: "We have a late entry policy. But we try not to forget the whole thing but can enter it late. No negligence is allowed. So if the nurse is not able to document something immediately, she or he will do it later."

Several things are meaningful in this excerpt by reference to Dooyeweerd's aspects

- Social: "we" - the nurse sees her in the organisation.
- Juridical: "late entry policy"; policies are attempts to define what is appropriate
- Psychic: forgetting
- Formative: the nurse is detailing procedure: "can enter it late"
- Juridical: the nurse is voicing rules: "no negligence is allowed"
- Lingual: the entire exchange is about writing, documenting.
- In the 38 excerpts, over three hundred such issues were identified by aspect.

5.2.3 Terminology used in this chapter

This section contains the terminology used in this chapter and in subsequent chapters.

- Utterance: the piece of text extracted from excerpts for analysis into aspects.
- Aspectual issues: the individual issues that are meaningful in one aspect.
- Excerpt: the pieces of conversation between interviewer and interviewee that each are analysed as one unit and have one table in Appendix 1.

Each excerpt is identified by a code of the form "T.n (r.x.y)", where:

T.n identifies the excerpt (or transaction) uniquely N is the number to identify them from 1 to 38

r = role of respondent: N = nurse, C = coders T= technician P= physician

x = unique number to identify the interviewee

y = unique number of the hospital.

5.3 Aspectual Interpretations of users excerpts

5.3.1 Users excerpts and tables

Dooyeweerd's aspects have been used to analyse the meaning of utterances to bring out what is meaningful for the interviewee. Some utterances are questions and coded as Q "question", some are direct answers coded by A that include an aspect or main aspect, and some are extra information coded by X. Often these are "multi aspectual" and contain more than one aspect. The meanings for questions and answers are meaningful for the researcher, while the extra information shows what is meaningful for the interviewee. The answers were split out to

phrases and applied aspects were linked to each phrase that reveals its meaning. The phrase and aspects were put in the table containing four columns:

- Columns 1 is the category of Aspects (Q, A, X)
- Columns 2 Aspects
- Columns 3 is the utterance
- Columns 4 is the aspectual issues

The full results are provided within Appendix.1. The two tables in this section show examples of the analysis and results. The first excerpt shows utterance and multi aspectual issues.

T.1 (N.3.2)-Question: “which is better to work on, the paper file or on the electronic file?”

Answer: “both are good, but both must be correctly used, because I cannot tell you which is better, because this requires study. Therefore, in order to know which is better, we must do brain storming. And all concerned parties must meet to take such a decision and to take the appropriate decision about which is better. I, on my own, cannot decide that, but there is some documentation that I can do for them minimizing and they become awareness”.

Category of aspect	Aspect	Utterance	Aspectual issues
A. Aspect	Analytical	Both are good	How each type will be used correctly
X	Analytical	I cannot tell you which is better, because this requires study. Therefore, in order to know which is better, we must do brain storming.	Clarify the reasons for which one is better.
	Social	And all concerned parties must meet to take such a decision	All users should involve to take decision about transition
X	Lingual	But there are some documentations that I can do for them minimizing and they become	Writing policy or update the excising

		awareness	
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Table 5-1 shows the category of aspects with aspectual issues

The above table indicates there were three categories of aspects. The first column is the aspect that makes the question meaningful. The second, called main aspects, are the aspects of the main direct answer of the questions whilst the third-extra aspects, are those aspects of asides and all extra information voluntarily given by the interviewee. These are often multiple, as is shown more clearly in the following table and its accompanying excerpt. The excerpt also illustrates a short conversation consisting of more than one question-answer pair.

T.26 (N.11.2) “Question: what type of work you do on the system”?

Answer: “there are not many things for the Department of New born Babies, and there is also a special program on the system for NEW BORN babies”.

Question: “What is the idea of this program”?

Answer: “When a child is born, we enter him/her to the system by his/her mother file’s number and we enter all the child data to make new file for him/her that is separate from the mothers file”.

Question: “Do you modify the child data that were entered in the past”?

Answer: “I don’t modify anything, I just separate the child data in a special file that is separated from his/her mother’s file because the Archive, if the medical records department, do not receive the file of the child if he/she is in the file of their mother. So when searching for the child's name in the system, a special file must be shown for the child with new number that is different from the number of their mother file”.

	Aspects	Utterance	Aspectual issues
A. Aspect	Analytic Lingual Quantitative	There are not many things for the Department of Newborn Babies, and there is also a special program on the system for NEW BORN babies.	Differentiate a program from another Lower amount of work to do by in system
X	Lingual Analytic	I don’t modify anything, I just separate the child data in a special file that is separated from his/her	Separating child from mother file. Separate mother and baby file Process of creating new file for baby.

	Formative Juridical	mother's file because the Archive	Taking responsibility for mother and baby files.
X	Lingual Juridical Formative Economic (deduce) Analytic Social	If the medical records department, do not receive the file of the child if he/she is in the file of their mother. So when searching for the child's name in the system, a special file must be shown for the child with new number that is different from the number of their mother file.	Receiving and sending files to medical records department. Newborn child should have separate file from his/her mother. Creating new files for baby, this is one step of her work. Economic Differentiate files. Communicating with other department.

Table 5-2 shows the category of aspects with reasons

The reflection of Aspectual interpretation will be discussed in conclusion of this chapter in section 5.6.

5.4 Quantitative Analysis of Aspectual issues

Analysis of the 38 tables in the appendix1 yields 317 aspectual analyses. The purpose of this section is to provide an initial quantitative summary of aspectual issues, as a source table for analysis in chapter seven. The following is the count by aspects of down to earth aspectual issues meaningful for users, derived from the above tables. The following table shows the number of issues meaningful for each aspect. Column one is the excerpt number. Column two identifies the interviewee, with hospital number appended. Column three identifies the language or nationality. A column four to eighteen is the count of meaningful issues for each excerpt by aspects.

Excerpt	Int.																	
no	no.	Lan.	Qua.	Spat.	Kin.	Phy.	Bio.	Psy	Anl	Fmv.	Ling.	Soc.	Eco.	Aes.	Jur.	Eth.	Pis.	Total
1	N.3.2	S	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	3
2	N.1.2	S	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	3
3	N.1.2	S	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	4
4	C.2.1	F	0	0	0	0	0	0	0	0	4	1	0	0	2	0	0	7
5	N.5.1	F	0	0	0	0	0	1	0	2	2	0	1	0	1	0	0	7
6	N.2.1	F	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	5
7	N.2.1	F	0	1	0	0	0	0	0	1	0	0	2	0	0	0	0	4
8	N.3.2	S	0	0	0	0	0	0	4	4	0	1	4	0	2	0	0	15
9	N.4.2	F	0	1	0	0	0	0	1	1	1	0	0	0	2	0	1	7
10	N.4.2	F	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
11	N.4.2	F	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	3
12	T.2.1	S	0	0	0	0	0	0	0	1	1	0	1	0	1	1	0	5
13	T2.1	S	0	0	0	1	0	0	1	1	2	1	1	0	2	0	0	9
14	T.2.1	S	0	0	1	0	0	0	0	1	0	0	0	0	1	0	1	4
15	N.5.3	F	0	1	0	0	0	0	0	1	0	1	0	0	1	0	0	4
16	A.1.3	S	0	0	1	0	0	0	0	2	1	0	1	0	0	0	0	5
17	N.6.3	F	0	1	0	0	0	0	0	2	0	0	1	0	3	0	0	7
18	C*.1.1	F	0	0	0	0	0	0	2	2	0	0	1	0	1	0	1	7
19	T.4.1	F	0	0	0	0	0	0	1	2	1	0	2	0	0	0	0	6
20	N.7.4	F	0	2	1	2	0	0	0	4	4	2	0	0	0	0	0	15
21	C.3.4	F	0	0	1	0	0	0	1	3	4	1	2	0	1	0	0	13
22	T.5.1	S	0	0	0	2	0	0	0	2	6	1	1	0	4	0	0	16
23	N.8.4	F	0	0	0	0	0	0	0	3	1	0	1	1	3	0	0	9
24	N.9.3	F	0	0	0	0	0	0	0	2	0	0	1	0	2	0	0	5
25	N.10.3	F	0	0	0	0	0	0	0	1	2	1	0	1	3	0	1	9
26	N.11.2	F	0	0	0	0	0	0	2	2	3	1	1	0	2	0	0	11
27	N.12.3	F	0	0	0	0	0	0	2	3	3	0	0	0	3	0	0	11
28	N.13.1	S	0	0	0	0	0	0	3	1	1	0	1	0	2	0	4	12
29	N.14.2	F	0	0	0	0	0	0	0	2	3	1	0	0	1	1	1	9
30	N.15.2	F	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	5
31	N.15.2	F	0	0	0	0	0	0	1	1	1	1	1	0	1	0	0	6
32	T.6.3	F	0	0	0	0	0	0	0	1	1	0	2	0	1	0	2	7
33	C*.1.1	F	0	0	0	1	0	0	3	6	3	1	3	0	3	0	1	21
34	I.1.1	S	1	0	0	0	0	0	0	1	3	1	2	0	2	0	0	10
35	P.1.2	S	0	0	0	0	0	0	1	1	1	0	1	0	2	0	0	6
36	P.1.2	S	0	0	0	0	0	0	2	5	4	0	2	0	4	0	2	19
37	P.1.2	S	0	0	0	0	0	0	2	2	1	0	0	0	0	1	1	7
38	C*.2.1	F	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	5

TOTAL	1	6	4	6	0	2	28	64	58	15	37	2	56	5	19	303
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Table 5-3 source table of Down To Earth aspectual issues meaningful to users in the analysed excerpts (More visible version of the source table can be found at the end of appendix.1)

The last table will be used several times in chapter six as the source for other analyses. The number of issues in each aspect indicates the amount of interest in each aspect. The following table shows the total amount of interest for aspectual issues among all users.

Aspect	No. of Aspectual issues for users	% of Aspectual issues for users
Quantitative	1	0.33%
Spatial	6	1.98%
Kinematic	4	1.32%
Physical	6	1.98%
Biotic	0	0.00%
Psychic	2	0.66%
Analytic	28	9.24%
Formative	64	21.12%
Lingual	58	19.14%
Social	15	4.95%
Economic	37	12.21%
Aesthetic	2	0.66%
Juridical	56	18.48%
Ethical	5	1.65%
Pistic	19	6.27%
TOTAL	303	100.00%

Table 5-4 Aspectual issues for users

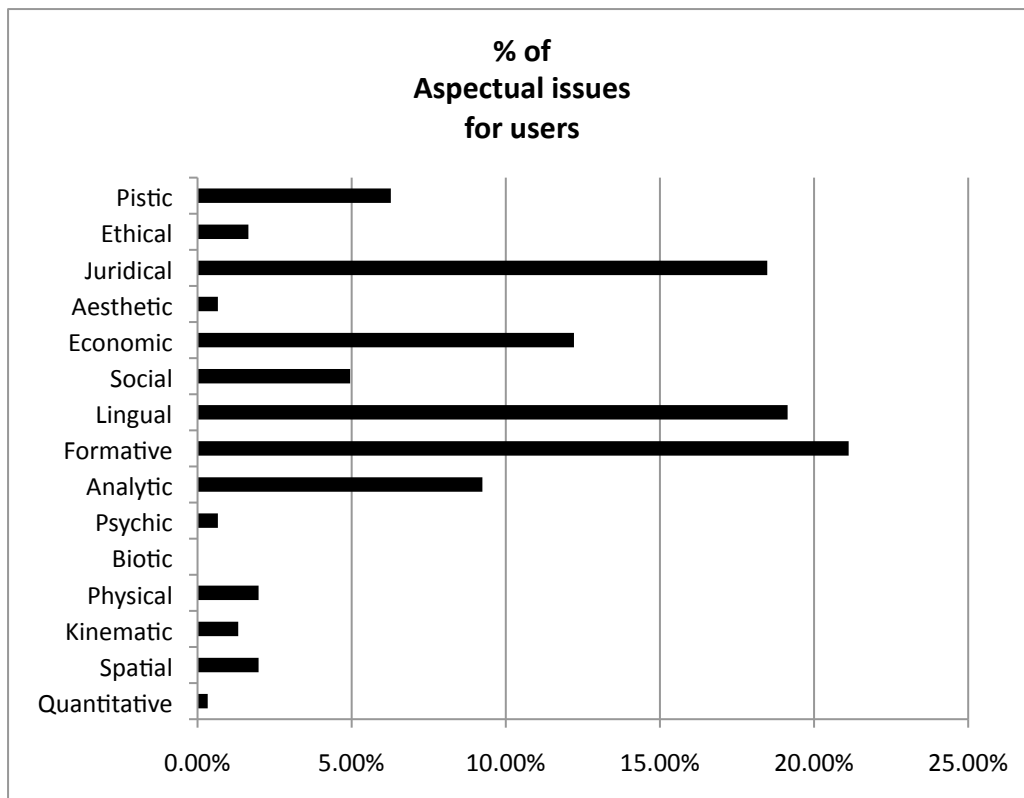


Figure 5-1 Visual representations of Down To Earth Aspectual issues meaningful for users

5.4.1 How bar chart has been analysed

The above bar chart, explores the pattern of aspectual meaningful issues for the users. This research adheres to an interpretive paradigm, which tends to make use of qualitative analysis, but this study includes both qualitative and quantitative approach. Quantitative analysis has thus been applied to gain insight about the kinds of issues that are most meaningful for the users. This leads to a discussion of the analysis in a way that suits the interpretative research. Quantitative analysis looks to determine the number of each aspect, to provide an aspectual profile of meaningfulness for users. This research does not apply statistical analysis as the focus is given to understanding the actual issues of EMR.

5.4.2 Actual analysis of bar-chart

Aspects with the highest percentage as illustrated in Figure 5-1:

- Formative aspect seems meaningful for the users, which is expected, as the users tend to achieve their work even though each user approaches their work in a unique way. However, work processes in hospitals tend to be linked, therefore each must be sequential e.g. a patient arrives at the hospital and is firstly checked at reception by a nurse, after

which a physician is likely to conduct certain checks whilst patient records are retrieved from the system etc.

- Lingual aspect is highly meaningful, as expected, because the record is an informational factor. Moreover, organisations need to speak, write, etc., as a result, the very nature of hospital records are lingual, particularly as a patient progresses via the various stages e.g. admission, length of stay in hospital, and discharge.
- Juridical aspect seems meaningful also for users as this aspect refers to the quality of their work, to providing good services to patients. However, strong interest in juridical issues was expected because EMR is a large investment, and staff need to ensure that the record is right.

Aspects with lower percentages:

- Biotic aspect usually describes patient health status. The researcher was surprised at the lack of mention given to biotic issues as these concern health, a central function of hospitals. So perhaps the biotic aspect is taken for granted by users.
- Aesthetic aspect was expected to be higher than the actual percentage; it may not have been meaningful for the users as they focus more on formative and juridical aspects of completing work effectively, even though the users and patients are not in harmony, e.g. patient does not respond to the nurse order. The latter example is based on the researcher's own experience though it did not feature during the interview. Perhaps it is taken for granted so they would like to do the required tasks.
- Ethical aspect seems less meaningful for the users, this may have been due to the it might be increase in work load or patient numbers. Furthermore, it was expected that ethical aspects would have garnered more interest and attention given that hospitals are largely about providing care.
- The reflection upon the quantitative analysis will be provided within the conclusion of this chapter in section 5.6.

5.5 Qualitative Analysis of Aspectual issues

All the fifteen aspects of Dooyeweerd's aspects that are meaningful to the users are discussed qualitatively in the following sections. Lists of aspectual issues are shortened versions of the aspectual issues column found in the 38 tables in the Appendix 1. The entries in tables are collected together by aspect and summarised, to yield the main issues. These are then grouped together within aspect and listed in their groups qualitative coding has been done by

using a technique offered by Miles and Huberman (1994). To each entry is added: the T number that identifies each transcript, the H number that identifies the hospital, and two letters: S letter indicates the Saudi nationality while F refer to foreigners or non-Saudi, N letter refers to the nurse and O letter refers to others health care staff.

All the aspectual issues are presented here; to show the range and types of down to earth issues meaningful in each aspect that medical records users speak about.

5.5.1 Quantitative aspect

The meaningfulness to users in quantitative issues is low. This is not a surprise as numbers are basically used to elaborate our findings and have no significance of their own.

- T.34 H.1.S.O Few doctors.

5.5.2 Spatial aspect

The spatial aspect is found 6 times (out of 317 - 1.89%) as can be seen from the bar chart and figure at the end of chapter six. An example of the users' spatial aspect is:

Question: “Can you tell me 'before' [implementation of EMR] first and then we will go through the latter”.

Answer: “Before, I used to collect lab results. Every morning I would go to the lab and collect results from the day before i.e. yesterday. For OPD only. After that I bring it here in Medical Records to arrange it. Sometimes patients do 2 or 3 investigations. So I arrange all of the together. After arranging, I write the logbook and then put it on the computer. Check also whether there is any appointment for following day. So I prioritise that task to check for following day”.

The spatial aspect is evident in phrases such as “go to the lab and collect results" and "I bring it here in Medical Records". Though there is some kinematic aspect there ("go to", "bring") it is the places that are more important, hence this is deemed spatial. Notice how this aspect is not in the interviewer's question, but is something the interviewee added spontaneously, suggesting something that is genuinely meaningful in their experience.

The following lists the meaningful spatial issues for the users:

Place of file

- T.7 H.1.F.N place of file

- T.9 H.2.F.N place of file
- T.15 H.3.F.N place of file
- T.20 H.4.F.N Place of file

Place of work

- T.17 H.3.F.N place of work (location in hospital)

Place of patient

- T.20 H.4.F.N Place of patient

It seems that the main reason that the spatial aspect was evident in the users' data, is that places are important in the everyday life of healthcare staff that uses the records. Records being in the wrong place are amongst one of the main problems of paper records that EMR offers a solution to. However the results show the place of record is also important in hospitals that use electronic records. In this, we see the usefulness of Dooyeweerd's aspects to bring hidden issues to the surface. It also suggests that in the design of EMR, spatiality should be considered.

5.5.3 Kinematic aspect

The kinematic aspect is present in the users' statements mainly in a secondary way. For example, in the previous example "go to ... I bring it here ... put it on the computer" is the Kinematic aspect of the statement where place is the primary concern. For the kinematic aspect to be of primary significance to the interviewees, they need to emphasize the moving as more than from place to place. Talking about speed needed or the difficulty of moving would make the kinematic aspect meaningful. It is perhaps surprising that such issues are not given much mention. Even if they are mentioned, they are included in a manner that is secondary with other aspects. An aspect might often be overlooked and yet still be important in the actual day-to-day use of EMR. Dooyeweerd's aspects analysis can help bring such secondary aspects to light and stimulate thought about them.

Movements

- T.14 H.1.S.O Extracting file from store or from system
- T.16 H.3.S.O taking is movement
- T.20 H.4.F.N Doctor comes (walking) to the ward
- T.21 H.4.F.N Moving files from medical records department to clinics

5.5.4 Physical aspect

The physical aspect seems to be less meaningful to users than we expect.

Physical work for office work

- T.13 H.1.S.O extracting file (using body)
- T.33 H.1.F.OTake the file back
- T.22 H.1.S.O Attached paper in the patient file manually (physically)
- T.22 H.1.S.O (doing office work)

Physical work for patient

- T.20 H.4.F.N Physical check of patient
- T.20 H.4.F.N Transfer Patient.

5.5.5 Biotic aspect

The biotic aspect is not given any significance by the user. This might be surprising for ordinary people but not for those in healthcare as biotic issues are related to day-to-day life of healthcare and they take it for granted. Some biotic issues among staff might be found. For example, some staff such as medical records technicians went to orthopaedics clinic to extract the files from shelves where they should move heavy mobile or roller shelving. By using this heavy roller daily it causes back pain etc. And they need to ask for some extra leave.

5.5.6 Psychic aspect

According to the quantitative analysis in Chapter 6, the psychic aspect is not considered as being very meaningful for users - only to 0.63%. Issues meaningful in this aspect include:

- T.5 H.1.F.N forgetting is a mental thing
- T.6 H.1.F.N Forget

The psychic seems to be a hidden aspect. Practically in hospital.1, it was to be expected given the number of patients at the hospital. This in turn creates greater workloads for nurses therefore heightening the likelihood that they would sometimes forget.

5.5.7 Analytical aspect

The analytic aspect, of making distinctions, is of moderate meaningfulness to users (10.09%).

Two examples found in the conversation, part of which was quoted for the spatial aspect above:

Question “what is your job description and routine work”?

Answer: “When I came here I was assigned to investigation work. My routine work before [EMR] and now is different”.

Question “Can you tell me before first and then we will go through the latter”.

Answer: “Before, I used to collect lab results. Every morning I would go to the lab and collect results from the day before i.e. yesterday for OPD only. After that I bring it here in Medical Records to arrange it. Sometimes patients do 2 or 3 investigations. So I arrange all of the together. After arranging, I write the logbook and then put it on the computer. Check also whether there is any appointment for following day. So I prioritise that task to check for following day”.

In starting to answer the question about job description, the interviewee sought to draw a distinction between before and after (the shift from paper to electronic records), so the interviewer asked for more about that. This led to uncovering the more immediate analytical issue of the distinction involved in extracting patient files and in checking that a file is the correct one. This analytical issue was mentioned several times. The meaningful issues for the users are the following:

Jobs differences when using EMR

- T.8 H.2.S.N nothing changed from before
- T.8 H.2.S.N differentiating nurse from others
- T.9 H.2.F.N Comparison about work
- T.13 H.1.S.O separation according to clinic
- T.19 H.1.F.O Difference between work before and after
- T.28 H.1.S.N Distinguishing staff: Classifying two groups of nurses
- T.28 H.1.S.N Distinguish between old and new employees.

- T.33 H.1.F.O Distinct tasks
- T.35 H.4.S.O classifying the role for doctors, nurse and ward clerk.
- T.36 H.2.S.O different between roles (clerk and ward clerk)
- T.36 H.2.S.O different type of work

Distinguishing the differences between EMR and PMR

- T.1 H.2.S.N Study the reasons for which one is better
- T.8 H.2.S.N Different forms
- T.11 H.2.F.N Differentiate between paper and electronic files
- T.18 H.1.F.O Differentiating between what needs paper and what can be electronic
- T.26 H.2.F.N Differentiate files
- T.27 H.3.F.N Specifying the consent form (Differentiate work)

Clarification about patient and physician

- T.28 H.1.S.N Identifying the reasons for physicians
- T.33 H.1.F.O Distinguish the problems
- T.37 H.2.S.O describing the reason of multi files for one patient.
- T.21 H.4.F.N identifying patient
- T.27 H.3.F.N identify if patient ready for surgery.
- T.37 H.2.S.O Identifying procedures of patient

Explanations about patient files

- T.8 H.2.S.N written in a form of a story.
- T.18 H.1.F.O Explaining the importance of each file based
- T.26 H.2.F.N Separate mother and baby file
- T.31 H.2.F.N Clarifications of adjust the time for typing.
- T.33 H.1.F.O Using ICD-10

The issues in jobs differences when using EMR seems more meaningful for the users, it could be because both hospital 1 and 3 are in competition with one another as both seek to improve their EMR. One of the interviewees mentioned, “Brain storming” was used in hospital 2 because they move from paper to electronic records.

5.5.8 Formative Aspect

The formative aspect is the aspect most meaningful to the users, scoring a total of 20.82%. It might be thought that this is because it is the aspect of technology, but the analysis below suggests otherwise. An example where users of health records find the formative aspect meaningful is provided below:

Question: “Why does the nurse write the nurses note in a form of a story”?

Answer: “It means explaining the details of the patient's condition written in a form of a story. I already told you that lack of improvement and development caused shortage and the absence of update. Documentation that is particular for nurse is supposed to be developed and updated by the ministry because since 8 years ago nothing has changed and never developed. And when we ask for position paper, I think it does not exist, especially the nurse that makes the position of the patient. Also, as for the emergency nurses' notes, we still update them through personal efforts from emergency management”.

The formative aspect comes through in "form", "improvement and development", "developed", "nothing has changed and never developed", "through personal efforts". Some relate to the Ministry's lack of developing documentation, and its impact on their working lives, while some relate to the extra effort that must be put in because of this. Development and effort are both meaningful by virtue of the formative aspect, and both impact on the use of health records.

The issues that are meaningful for users in the formative aspect are the following:

Achieving work

- T.5 H.1.F.N Able to. Do it
- T.7 H.1.F.N achieving works
- T.8 H.2.S.N doing job
- T.8 H.2.S.N achieving routine work.
- T.9 H.2.F.N achieve work
- T.13 H.1.S.O achieve work
- T.19 H.1.F.O Type of work
- T.21 H.4.F.N Achieving the task

- T.21 H.4.F.N Achieving the work
- T.21 H.4.F.N doing the required task
- T.22 H.1.S.O Achieving all required steps (deduced)
- T.22 H.1.S.O Achieving their work as teamwork
- T.23 H.3.F.N achieving the work steps
- T.24 H.3.F.N Achieving all required work
- T.27 H.3.F.N Achieving the work process
- T.29 H.2.F.N Achieving the requirement work
- T.30 H.2.F.N Achieving the required work easily
- T.33 H.1.F.O Aim to achieve the work
- T.33 H.1.F.O Doing the rest of work for the second coder
- T.33 H.1.F.O getting to do job
- T.33 H.1.F.O not achieving the required work.
- T.33 H.1.F.O To do the requirement task
- T.35 H.4.S.O achieving the process of patient records.
- T.37 H.2.S.O achieving the files process in the past

Processing work

- T.17 H.3.F.N Processing work
- T.19 H.1.F.O work process in details
- T.20 H.4.F.N work process
- T.25 H.3.F.N Processing hospital work
- T.29 H.2.F.N Processing the daily work
- T.33 H.1.F.O The process of work
- T.36 H.2.S.O Processing the task
- T.36 H.2.S.O The work process

Improving and development

- T.5 H.1.F.N awareness/ attention
- T.31 H.2.F.N improving their skills by orientation of EMR
- T.32 H.3.F.O increasing skill
- T.28 H.1.S.N Ability to learn quickly
- T.8 H.2.S.N update and improvement

- T.8 H.2.S.N lack of development
- T.23 H.3.F.N Reaching their goal
- T.36 H.2.S.O productive work

Quality of hospital system

- T.24 H.3.F.N Using hospital system.(achieving with system)
- T.38 H.1.F.O System is not flexible.
- T.11 H.2.F.N fault in work process. Difficulty of using a system
- T.18 H.1.F.O Important problem
- T.14 H.1.S.O easier and faster
- T.16 H.3.S.O Finding for duplicate file
- T.36 H.2.S.O Difficulty to finish the work
- T.36 H.2.S.O Easy for ward clerk
- T.37 H.2.S.O Importance of medical records
- T.12 H.1.S.O damage on the source things could be happens to affect the life of paper record such as fire etc
- T.18 H.1.F.O Failure (was She is giving details of a work situation)

Create/design for patient file

- T.16 H.3.S.O design file
- T.17 H.3.F.N Follow up entry
- T.20 H.4.F.N Arrange the files
- T.26 H.2.F.N Creating new files for baby
- T.26 H.2.F.N Process of creating new file for baby
- T.27 H.3.F.N Find out consent form

Hospital policy and procedure

- T.23 H.3.F.N Following the hospital policy
- T.27 H.3.F.N Following all work process
- T.20 H.4.F.N intends to make an appointment
- T.34 H.1.S.O the processing for dictating and writing the report

Patient care

- T.3 H.2.S.N Patient care
- T.15 H.3.F.N Examining patient
- T.20 H.4.F.N Transferring patient

5.5.9 Lingual Aspect

The lingual aspect is the second highest in meaningfulness to the users, with a total result of 18.93%. An example of how the lingual aspect is important to users is found in the excerpt used above in the psychic aspect:

Question “What if the nurse forgets to write things down”?

Answer: “We have a late entry policy. But we try not to forget the whole thing but can enter it late. No negligence is allowed. So if the nurse is not able to document something immediately, she or he will do it later.”

The interviewee found the lingual aspect important in writing and data entry. In the whole cohort of the users, reading and reviewing are the most important, recording, writing and data entry were moderately important, and documentation and other issues are less important.

The following show the lingual issues for the users:

Patient records

- T.4 H.1.F.O Correcting grammar
- T.4 H.1.F.O Typing
- T.5 H.1.F.N Writing late information
- T.10 H.2.F.N writing in patient file.
- T.12 H.1.S.O Rewrite in paper file
- T.13 H.1.S.O Writing n/a (Not available in the shelves)
- T.16 H.3.S.O Labelling
- T.19 H.1.F.O Write, put onto computer, check
- T.20 H.4.F.N Writing patient information
- T.20 H.4.F.N Sign from doctor.
- T.21 H.4.F.N Writing file number
- T.22 H.1.S.O Doctor reading and stamping document(s)
- T.22 H.1.S.O Doctors stamping the document(s)
- T.22 H.1.S.O writing at nurse’s note.

- T.27 H.3.F.N writing in nurses note.
- T.29 H.2.F.N Filling some patient forms
- T.32 H.3.F.O Typing
- T.34 H.1.S.O Entering data
- T.34 H.1.S.O doing lingual task reviewing, amendments etc.
- T.34 H.1.S.O Doctors registers the report by using systems etc.
- T.36 H.2.S.O doing lingual tasks (admitted, etc.)
- T.36 H.2.S.O Writing in file

Activities with records

- T.20 H.4.F.N Arrange patient file
- T.20 H.4.F.N The clerk did it
- T.21 H.4.F.N Doing work manually
- T.21 H.4.F.N Generating serial files number
- T.21 H.4.F.N Receiving files and creating new files
- T.22 H.1.S.O Attached, arranged patient files
- T.26 H.2.F.N Receiving and sending files
- T.26 H.2.F.N Separating child from mother file
- T.26 H.2.F.N Special program on system
- T.27 H.3.F.N Finding out the forms
- T.29 H.2.F.N Checking patient file
- T.29 H.2.F.N Patient informing
- T.30 H.2.F.N Find the information at nurses note
- T.33 H.1.F.O Checking the file
- T.35 H.4.S.O checking patient files.
- T.37 H.2.S.O Generating a new file

Staff communication

- T.1 H.2.S.N writing policy or update the excises
- T.13 H.1.S.O Using computer
- T.22 H.1.S.O Communicating by writing
- T.22 H.1.S.O Doing office work
- T.36 H.2.S.O Physician accent

- T.36 H.2.S.0 The physician dictated the discharge summary
- T.38 H.1.F.0 entering data into system.

Documentation or information

- T.3 H.2.S.N Required documentation
- T.5 H.1.F.N Document something
- T.23 H.3.F.N Documentation
- T.25 H.3.F.N Documentation
- T.25 H.3.F.N Documented at patient file

Learning/training

- T.28 H.1.S.N Learning ability
- T.31 H.2.F.N Training to use EMR.
- T.33 H.1.F.0 Not entering diagnosis in system by themselves
- T.33 H.1.F.0 researching on your own.

Outsider communication

- T.4 H.1.F.0 Booking appointments
- T.4 H.1.F.0 Receiving calls

Patient communication

- T.9 H.2.F.N Physician checking patients file
- T.27 H.3.F.N Sign by patient.

There is a long list of issues for patient records group. That is not surprising; patient records are the main theme for all health care providers in this research, so they give more consideration to it.

5.5.10 Social Aspect

The social aspect is of low meaningfulness to the users (4.73%). The excerpt quoted for the formative aspect also contains social aspects:

Question, “Why does the nurse write the nurses note in a form of a story”?

Answer: “Its mean explain the details of the patient's condition written in a form of a story. I already told you that lack of improvement and development caused shortage and the absence of update. Documentation that is particular for nurse is supposed to be developed and updated by the ministry because since 8 years ago nothing has changed and never developed. And when we ask for position paper, I think it does not exist, especially the nurse that makes the position of the patient. Also, as for the emergency nurses' notes, we still update them through personal efforts from emergency management”.

The social issue that relates to health records here is the collective sense of 'we', which refers to the group of nurses acting together against a different group, the Ministry. This might not seem important to medical care, but because the Ministry as a whole did not do what they promised, problems were caused that affected the way health records were handled. The main issues of concern among users of the social aspect were working as a group or role within the hospital.

Communication

- T.1 H.2.S.N Communication between high authority and nurses
- T.4 H.1.F.O Communicating between nurses and physicians
- T.8 H.2.S.N There is miscommunication among them
- T.15 H.3.F.N Role of nurses and doctors
- T.20 H.4.F.N Role of Communication between doctors and clerks
- T.22 H.1.S.O Updating each other.
- T.25 H.3.F.N Endorsing to the next shift
- T.26 H.2.F.N Communicating with other departments
- T.29 H.2.F.N Communication roles
- T.34 H.1.S.O communication between doctors and dictation companies

Group work

- T.13 H.1.S.O Role of nurses and working as group work together
- T.20 H.4.F.N Working as the group (we)
- T.21 H.4.F.N Coordinating with other
- T.31 H.2.F.N Working as a group
- T.33 H.1.F.O Working as a group

The difference in types of issues of interest might be attributed to difference in cultural background between the users. In a society such as that of Saudi Arabia, there is a mix of nationalities and therefore a rainbow of social backgrounds.

5.5.11 Economic Aspect

The economic aspect is very meaningful to the users with 13.25%. The economic aspect of users relates to resources. For example:

Question: what are/is the disadvantage of paperwork?

Answer: Duplication of work.

Waste (duplication) is an issue that is meaningful in the economic aspect.

Time resources

- T.5 H.1.F.N Time consuming
- T.6 H.1.F.N Rarely forget
- T.7 H.1.F.N Time consuming
- T.7 H.1.F.N Time needed
- T.12 H.1.S.O Time consuming
- T.13 H.1.S.O Time consuming
- T.16 H.3.S.O Happened many times
- T.17 H.3.F.N Length of stay
- T.23 H.3.F.N Time frame
- T.32 H.3.F.O Time consuming
- T.19 H.1.F.O Time consuming
- T.19 H.1.F.O Time consuming
- T.30 H.2.F.N Easy
- T.24 H.3.F.N Taking immediate action
- T.31 H.2.F.N Time consuming

General resources

- T.2 H.2.S.N Resources

- T.2 H.2.S.N Resources
- T.18 H.1.F.O Importance of format
- T.26 H.2.F.N Economic
- T.36 H.2.S.O Budget
- T.36 H.2.S.O Budget
- T.38 H.1.F.O Cost
- T.34 H.1.S.O Resources

Technical resources

- T.8 H.2.S.N Shortage, absence
- T.8 H.2.S.N changed from high authority.
- T.8 H.2.S.N Lack of improvement
- T.28 H.1.S.N Staff training
- T.32 H.3.F.O Writing skills
- T.33 H.1.F.O Staff availability
- T.34 H.1.S.O Accumulates work

Information resources

- T.8 H.2.S.N Availability of format
- T.21 H.4.F.N Number of files per day
- T.21 H.4.F.N Numbers of files
- T.22 H.1.S.O Chronological order
- T.33 H.1.F.O Accurate statistic
- T.33 H.1.F.O Need statistic
- T.35 H.4.S.O Number of admission

Users found time resources extremely meaningful because using EMR daily. The important of time resources has implications for design of EMR.

5.5.12 the Aesthetic Aspect

The aesthetic aspect seems to be very low in meaningfulness to users, with just 0.32%. The aesthetic aspect, which includes playfulness or enjoyment, is seldom mentioned. Though it is

known that enjoyment of work enhances the quality of work, it is often assumed that mention of aesthetic aspects is inappropriate for work situations. So the aesthetic aspect is important but hidden to users. Pending further research, the low values could represent a 'referral standard', to the cultural differences that might play some role in the transfer from paper to electronic records.

- T.23 H.3.F.N Providing work smoothly
- T.25 H.3.F.N Continuity of care

The low significance of the aesthetic aspect to users might be expected because there are different factors in each hospital e.g. workload, type of patient, lack of improvement etc.

5.5.13 The Juridical Aspect

The juridical aspect is highly meaningful to users. It is third highest for the users (17.35%). This is not surprising because hospital work is increasingly tied into legislation and a norm of doing the right thing by the patient. An example of juridical issues important to users of health records is found in the excerpt already cited in T.1

Question: “Which is better to work on, the paper file or on the electronic file”?

Answer: “Both are good, but both must be correctly used. Because, I cannot tell you which is better, because this requires study. Therefore, in order to know which is better, we must do brain storming. And all concerned parties must meet to take such a decision and to take the appropriate decision about which is better. I, on my own, cannot decide that, but there are some documentations that I can do for them minimizing and they become wireless”.

The interviewee (a nurse) diverted the question from a straight preference for paper or electronic records, to what she thought were more important issues, both of which happen to be juridical meaningful. One is correct use (whichever kind of record). The other is appropriate procedure for deciding (all interested parties need to be consulted). That the interviewer does not dictate these issues indicates issues that are particularly important to her (the participant), and thus should be more carefully considered in any research into EMR.

Among users as a whole, the most frequently mentioned juridical issue is 'right file for patient' (which links with the analytic aspect of selection), followed by trying to prevent inappropriate people from reading the patient records. Other issues include who is the appropriate keeper of the records, proper order, ensuring appropriate treatment, authority and quality assurance. The following show the juridical meaningful issues for the users:

Properly in work

- T.2 H.2.S.N Appropriate place
- T.5 H.1.F.N Work in a right way
- T.6 H.1.F.N Focusing in job
- T.10 H.2.F.N Job accuracy
- T.15 H.3.F.N Job accuracy
- T.17 H.3.F.N Work appropriateness
- T.23 H.3.F.N Properly work
- T.24 H.3.F.N Properly work
- T.25 H.3.F.N Rightness job
- T.28 H.1.S.N Focusing on file
- T.29 H.2.F.N Right way (work)
- T.30 H.2.F.N Work rightness
- T.32 H.3.F.O Rightness
- T.33 H.1.F.O Properly way
- T.34 H.1.S.O Required work
- T.34 H.1.S.O Incomplete files

Properly for documentation

- T.17 H.3.F.N Proper way
- T.17 H.3.F.N Properly way in document
- T.18 H.1.F.O Document appropriateness
- T.21 H.4.F.N Properly job
- T.22 H.1.S.O Properly records
- T.22 H.1.S.O Properly arranging files
- T.22 H.1.S.O Authentication
- T.22 H.1.S.O Right information

- T.23 H.3.F.N Properly documentation
- T.25 H.3.F.N Documented properly
- T.26 H.2.F.N Properly document
- T.27 H.3.F.N Consent form
- T.36 H.2.S.O Document properly

Nurses' responsibilities

- T.4 H.1.F.O Responsibility of nurses
- T.8 H.2.S.N Responsibility of nurses
- T.8 H.2.S.N Responsibility of nurses
- T.9 H.2.F.N Nurse preference
- T.14 H.1.S.O Dependency
- T.24 H.3.F.N Responsibility of nurse
- T.26 H.2.F.N Nurses responsibility
- T.27 H.3.F.N Responsible doctor
- T.28 H.1.S.N Responsibilities of nurses and doctors
- T.33 H.1.F.O Nurses responsibility
- T.35 H.4.S.O Responsibilities

Accessibility

- T.9 H.2.F.N Confidentiality
- T.12 H.1.S.O Safety (place of file)
- T.13 H.1.S.O Deserves
- T.13 H.1.S.O Accessibility
- T.23 H.3.F.N Policy
- T.27 H.3.F.N Fulfilments
- T.31 H.2.F.N Difficulties
- T.33 H.1.F.O All cases

Staff responsibilities

- T.35 H.4.S.O Ward clerk responsibilities
- T.36 H.2.S.O Responsibility task
- T.36 H.2.S.O Staff responsibilities

- T.36 H.2.S.O Appropriate qualified staff
- T.38 H.1.F.O Job responsibility
- Properly for Patient care
- T.3 H.2.S.N Proper duty for patient care
- T.4 H.1.F.O Proper beds and care
- T.25 H.3.F.N Care for patient

The users show more interest in the issues related to "properly in work", especially in first and third hospitals. These two hospitals have EMR and there is a challenge between them to improve EMR. However, most of the health care providers focus on their work to do it properly.

5.5.14 The Ethical Aspect

The ethical aspect of self-giving attitude appears seldom (only 1.89%) in the users.

These issues were barely meaningful to users and are as follows:

Concern about patient

- T.3 H.2.S.N Concern more about patient by giving time
- T.29 H.2.F.N Self-giving, doing her best skills to care for patient
- T.12 H.1.S.O Less vulnerable to loss (because E-files are more secure and located in the computer)
- T.37 H.2.S.O Emphasis the value of documentation.
- Concern about staff
- T.6 H.1.F.N Not mentions others

It is surprising that the ethical aspect is mentioned less, because the nature of health care involves nurses or doctors being self-giving

5.5.15 The Pistic Aspect

The pistic aspect feature is meaningful among the users by 6.31%. The pistic aspect was found to be meaningful in the following issues:

Beliefs in system

- T.11 H.2.F.N Beliefs in computer literacy
- T.28 H.1.S.N Belief in training for new staff
- T.28 H.1.S.N Belief in physicians training
- T.30 H.2.F.N Believes by using system easily.
- T.33 H.1.F.O Satisfaction with system
- T.36 H.2.S.O Believes filing depends on hospital establishment
- T.37 H.2.S.O Belief in Importance

Beliefs in nurses' ability

- T.6 H.1.F.N Proud and believes in herself
- T.9 H.2.F.N Believes in the nurses
- T.28 H.1.S.N Believes or proud of nurses ability
- T.28 H.1.S.N Believes in the foreigners
- T.29 H.2.F.N Self giving
- T.38 H.1.F.O Proud of job

Beliefs in General resources

- T.14 H.1.S.O Belief in EMR
- T.18 H.1.F.O Believes discharge summery is most important
- T.25 H.3.F.N Believes in documentation
- T.32 H.3.F.O Believes in writing in paper records
- T.32 H.3.F.O Vision about young and educated people
- T.36 H.2.S.O Belief about work

The pistic aspect deals with issues like trust, belief, commitment and religion. However, there are two levels of this, one more visible than the other. At the deeper level, pistic issues are usually unspoken and seldom reflected upon except in some religious or philosophical discussions. At the more visible level one might expect mention of such issues as trust between nurses, physicians and technical staff to have been mentioned. Also, formal religious issues might have been mentioned, especially in Saudi Arabia, in which the interviewees were working. So the question this raises is whether in such climates, people suppress the manifestations of religion during interviews or perhaps take it for granted.

Researchers might focus on work-related activities, presupposing that religion is a private matter that has no impact on work. Such factors would deter adequate treatment of the pistic aspect.

The reflection of Qualitative analysis will be discussed in conclusion of this chapter in section 5.6.

5.5.16 Overview

This section summarises the groups of issues that give insight into the kind of issues that are of interest to users. The groups of DTE issues mentioned by users each aspect as analysed in chapter six. These groups achieved this by classifying the meaningful issues and identifying the related issues in specific groups as follows:

1-Quantitative aspect

Few doctors. 1 time

2-spatial aspect

Place of file 4 times

Place of work 1 time

Place of patient 1 time

3-Kinematic aspect

Movements 4 times

4-Physical aspect

Physical work for office work 4 times

Physical work for patient 2 times

5-Biotic aspect

None

6-Psychic aspect

Forgetting 2 times

7-Analytical aspect

Jobs differences when using EMR 11 times

Distinguishing the differences between EMR and PMR 6 times

Clarification about patient and physician 6 times

Explanations about patient files 5 times

8-Formative Aspect

Achieving work 24 times

Quality of hospital system 11 times

Processing work 9 times

Improving and development 8 times

Create/design for patient file 6 times

Hospital policy and procedure 4 times

Patient care 3 times

9-Lingual Aspect

Verbal and written Communication

Patient records 22 times

Activities with records 16 times

Staff communication 8 times

Documentations or information 5 times

Learning/training 4 times

Outsider communication 2 times

Patient communication 2 times

10-Social Aspect

Communication 10 times

Group work 5 times

11-Economic Aspect

Time resources 16 times

General resources 8 times

Technical resources 7 times

Information resources 7 times

12-The Aesthetic Aspect

Work smoothly 1 time

Continuity of care 1 time

13-The Juridical Aspect

Properly in work 16 times

Properly for documentation 13 times

Nurses' responsibilities 11 times

Accessibility 9 times

Staff responsibilities 5 times

Properly for patient care 3 times

14-The Ethical Aspect

Concern about patient 3 times

Others 2 times

Concern about staff 1 time

15-The Pistic Aspect

Beliefs in system 7 times

Beliefs in nurses' ability 6 times

Beliefs in General resources 6 times

5.6 Conclusion

In this chapter the following emerged:

-317 aspectual issues that are meaningful for users

-The aspectual profile shows a wide range of interest among users of medical records, which covers all aspects but to different degrees.

Section 5.3 shows that aspectual interpretation enables us to reveal the meaningful, aspectual issues by assigning aspects for each utterance.

Quantitative aspectual analysis (Section 5.4) enables us to uncover the meaningful, aspectual issues because it stimulates the researcher to ask questions. The numbers of the aspectual issues helps to uncover the reasons varying percentages in the charts.

Qualitative aspectual analysis (Section 5.5) enables us to classify the meaningful issues by grouping the meaningful issues and by aspects.

The next chapter uses the data of chapter 5 to analyse several sets of cohorts.

CHAPTER SIX: Aspectual Analysis of Meaningful Issues of Users

6.1 Introduction

This chapter undertakes aspectual analysis to generate findings about meaningful Down to Earth (DTE) issues of medical record (MR) uses. The following analyses are carried out in this chapter to provide insight about DTE issues in use of medical records, using the aspectual issues that are meaningful in MR use, which were found in chapter 5.

1- Comparisons of the aspectual meaningful issues among four hospitals to gain an overview of differences in the aspectual issues around the users of medical records. Two of these hospitals have paper- and electronic-based patient records and the other two hospitals have paper-based only records. The rationale behind the analyses lies in the fact that it allows the researcher to discover the extent to which culture and situational factors affecting the hospital change the overall profile of Down To Earth Issues.

2- Comparisons between the aspectual meaningful issues found in paper records and the issues found in electronics records uses. Combining the aspectual issues of hospitals 1 and 3 that use electronic records and combining those of hospitals 2 and 4 that use only paper records do this. This research was set against the backdrop of the Kingdom of Saudi Arabia where the Ministry of Health is currently prioritising the adoption and implementation of electronic records. As such, Ministry intends on ensuring that all hospitals operating in the Kingdom transition from paper based to full electronic records.

3- Comparisons between the aspectual issues meaningful to nurses and other health care providers to gain insight about the interest of DTE issues for each cohort, and also to find out whether the difference in health care providers might change in aspects profile. This comparison shows the different perspective of health care providers, although health care providers work in the same hospital or same ward, the type of aspectual issues is not the same. This is shown by the analysis of the aspectual issues for each health care provider. The study compares the meaningful issues for nurses as the main user of the record with other users of patient records.

4-Comparisons between the aspectual meaningful issues for both Saudis and non-Saudis (foreigners). This can give insight about how the difference in culture and background might

change in aspects results. Usually the hospitals in KSA recruit foreigner employees from India and the Philippines; the decision to do so is driven by a number of factors including the salary base for these employees, education, or their overall work ethic, but recently, the Saudi government has instructed the Ministry of Health and other ministers as well to recruit Saudi employs. As a result, it was significant to see the meaningful issues for culture across between nationalities

This chapter undertakes quantitative and qualitative analyses for each cohort by aspect. The quantitative analysis will be mainly be of patterns rather than individual numbers as has previously discussed in chapter 5 in section 5.4

6.2 Quantitative Analysis

6.2.1 Quantitative Comparison of DTE Issues between Hospitals

This section compares Down To Earth issues of health records use between the four hospitals. This was achieved by splitting the source table shown in section 5.4, into four tables, one for each hospital. For each table the totals of the fifteen aspects were calculated to show the amount of interest in issues meaningful in each aspect for each hospital. This total was transferred to the following table 6-1.

Aspect	Hospital.1	Hospital.2	Hospital.3	Hospital.4
Quantitative	1	0	0	0
Spatial	1	1	2	2
Kinematic	1	0	1	2
Physical	4	0	0	2
Biotic	0	0	0	0
Psychic	2	0	0	0
Analytic	10	14	2	1
Formative	21	21	12	10
Lingual	24	19	7	9
Social	5	5	2	3
Economic	17	12	5	3
Aesthetic	0	0	1	1
Juridical	21	18	13	4
Ethical	2	3	0	0
Pistic	9	7	3	0
Total	118	100	48	37

Table 6-1 the amount of interest in each aspect for each hospital

The following table 6-2 converts this to percentages.

Aspect	Hospital.1	Hospital.2	Hospital.3	Hospital.4
Quantitative	0.85%	0.00%	0.00%	0.00%
Spatial	0.85%	1.00%	4.17%	5.41%
Kinematic	0.85%	0.00%	2.08%	5.41%
Physical	3.39%	0.00%	0.00%	5.41%
Biotic	0.00%	0.00%	0.00%	0.00%
Psychic	1.69%	0.00%	0.00%	0.00%
Analytic	8.47%	14.0%	4.17%	2.70%
Formative	17.80%	21.00%	25.00%	27.03%
Lingual	20.34%	19.00%	14.58%	24.32%
Social	4.24%	5.00%	4.17%	8.11%
Economic	14.41%	12.00%	10.42%	8.11%
Aesthetic	0.00%	0.00%	2.08%	2.70%
Juridical	17.80%	18.00%	27.08%	10.81%
Ethical	1.69%	3.00%	0.00%	0.00%
Pistic	7.63%	7.00%	6.25%	0.00%
Total	100%	100%	100%	100%

Table 6-2 the percentages of the aspectual meaningful issues in each aspect hospital

These percentages are now shown in the following bar charts.

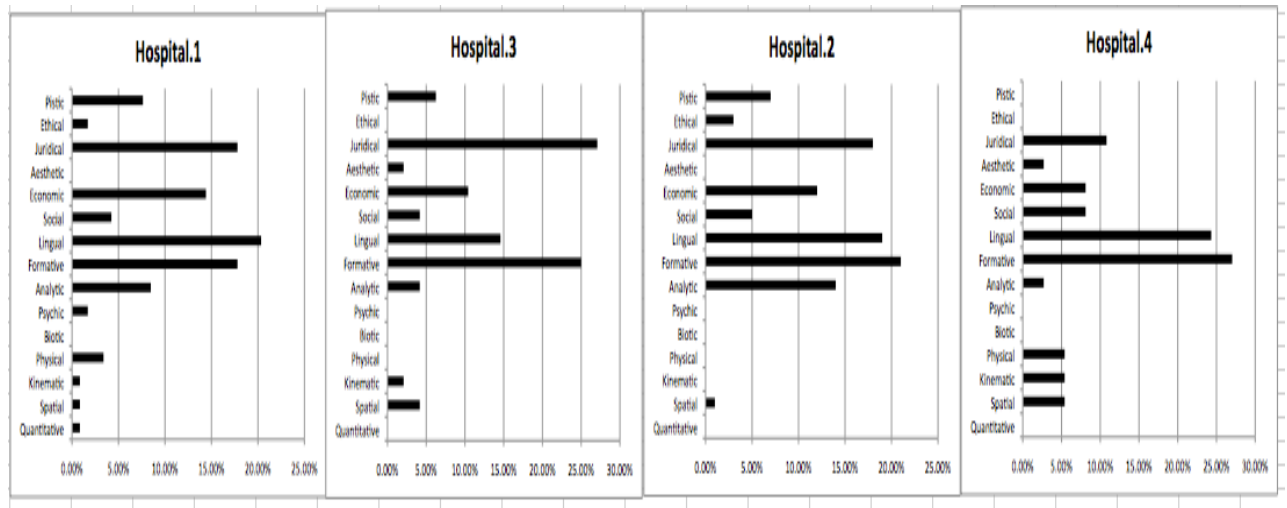


Figure 6-1 different aspects for the four hospitals

6.2.2 Discussion of Meaning of Bar chart:

Comparing the four hospitals shows differences in how meaningful each aspect is to each hospital.

Pistic aspect is meaningful 1, 2, and 3 but null in 4

Ethical aspect seems meaningful for hospital 2 and 1

Juridical aspect 1,2,3 but less in 4

Formative aspect 2, 3, and 4 less in 1

Analytic aspect 2, 1 but less in 3, 4

Social aspect meaningful for 1 and 3

Physical aspect meaningful for hospital 1 and 4

Spatial in 3 and 4

Quantitative 1 and 2

The following discusses juridical and analytic aspects in which one hospital is different from the other three hospitals. Hospital 4's results might not be significant because of the low number of interviewees.

The juridical aspect is much lower in hospital.4 than other hospitals 1 to 3. This might be because hospital.4 cares for many prisoners. The juridical aspect concerns responsibility. The staff might feel less responsibility toward prisoners e.g. if there are patient referrals from prison, the healthcare providers might think this patient does not deserve quality treatment. Note however that, the number of interviewees in this hospital is low, so, this difference might not be valid.

The *juridical* aspect is highly meaningful in hospital.3. This might be accounted for because the majority of patients who seek treatment at or referral to hospital 3 originally come from villages around Mecca . “Fewer patients” are eligible to have treatment in hospital 3. That is because of the hospital's location, outside Mecca. This gives opportunity for non-Muslims to work in hospital.3. These two factors help users to focus more on patient services.

With concern of locations, hospital1 located in Mecca, is easily accessed from the highway. Usually this hospital is overloaded with huge numbers of patients especially in the religious seasons such as Ramadan and Hajj. So less interest in *juridical* aspect might be expected, because the staff in this hospital work like bees “busy all the time”.

Hospital2 is located inside Mecca but in a crowded area and has old buildings there is a shortage of employees. Usually the hospital recruits health care providers in all specialties for

seasonal periods. So workers in this hospital show also significant interest in *juridical* in terms of focus on their work and to improve their ability. Work overload challenges them to concentrate to provide a good work for the patient also helps them to improve their skills. The *Analytic* aspect seems more interesting for hospital 1 and 2 but, less interesting for hospital 3.

Both hospital 1 and 2 are located inside Mecca, so usually these hospitals have more workloads during Hajj and Ramadan. In this seasonal period of the year, the employees do their best to stimulate the required task and ensure they are done in keeping with quality standards. During pilgrimage seasons, the hospitals treats patients from a vast number of backgrounds and nationalities; this brings about challenges for hospital staff, particularly when neither English nor Arabic are spoken. There is a need to find interpreters to communicate with them as a result.

However, hospital 3 is located outside Mecca, so there will be lower workload for the health care providers. More often, the employees are focusing more on updating the hospital policy and procedures due to challenges surrounding the present EMR. There remains a great deal of competition between hospital 1 and hospital 3 in trying to improve their EMR.

In using Dooyeweerd's aspects we have been able to uncover hidden issues, which are seldom thought about when thinking about EMR. Such issues need to be taken into account in the design of EMR, not only the technical system but also the human context around the system.

There is a qualitative comparison among these four hospitals in section 6.2.5 below.

6.2.3 Quantitative Comparison DTE Issue between Paper and Electronic Records

This section compares Down To Earth issues between two hospitals that use Electronic Medical Records (Hospital1 and Hospital3) and two hospitals' that use Paper Medical Records (Hospital2 and Hospital4). The reason for this relates to the fact that one of the primary motivation of this research relates to the transition from Paper to Electronic Records. These are examples of cohort analyses that can be carried out using the meaningful aspectual issues from users in Chapter 5. Other cohort analyses are possible, which can be carried out in future work. For this analysis the count of hospitals 1 and 3 were combined and the count

of hospitals 2 and 4 were combined to create the following two tables of count and percentages from the table above.

Aspect	Hospital.1	Hospital.3	E-Hospitals	% of E-hospitals
Quantitative	1	0	1	0.60%
Spatial	1	2	3	1.81%
Kinematic	1	1	2	1.20%
Physical	4	0	4	2.41%
Biotic	0	0	0	0.00%
Psychic	2	0	2	1.20%
Analytic	10	2	12	7.23%
Formative	21	12	33	19.88%
Lingual	24	7	31	18.67%
Social	5	2	7	4.22%
Economic	17	5	22	13.25%
Aesthetic	0	1	1	0.60%
Juridical	21	13	34	20.48%
Ethical	2	0	2	1.20%
Pistic	9	3	12	7.23%
Total	118	48	166	100.00%

Table 6-3 The amount and percentages of aspectual meaningful issues for hospitals using Electronic medical records

Aspect	Hospital.2	Hospital.4	Paper Hospitals	%of Paper Hospitals
Quantitative	0	0	0	0.00%
Spatial	1	2	3	2.19%
Kinematic	0	2	2	1.46%
Physical	0	2	2	1.46%
Biotic	0	0	0	0.00%
Psychic	0	0	0	0.00%
Analytic	14	1	15	10.95%
Formative	21	10	31	22.63%
Lingual	19	9	28	20.44%
Social	5	3	8	5.84%
Economic	12	3	15	10.95%
Aesthetic	0	1	1	0.73%

Juridical	18	4	22	16.06%
Ethical	3	0	3	2.19%
Pistic	7	0	7	5.11%
Total	100	37	137	100.00%

Table 6-4 The amount and percentages of aspectual meaningful issues for hospitals using paper records

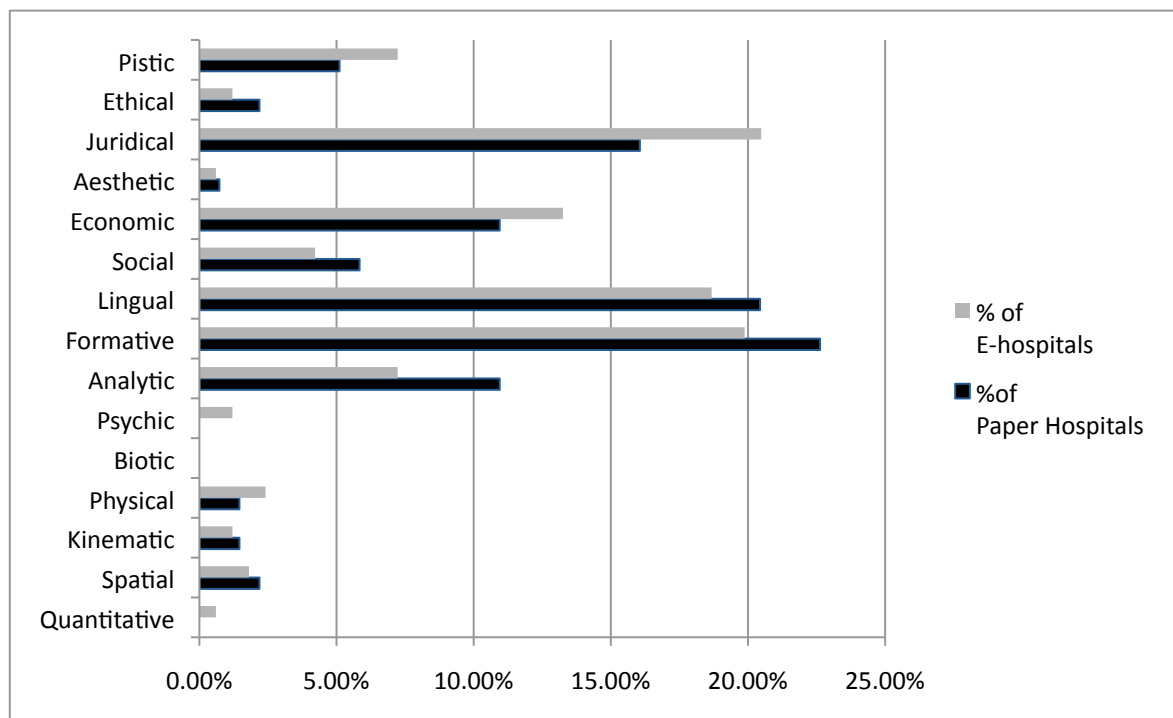


Figure 6-2 Bar chart showing the percentages of paper and electronic uses in hospitals

6.2.4 Discussion of Meaning of Bar chart

The *Social* aspect is higher in hospitals that use paper records. This may be expected; because the staff in those hospitals uses less technology and the result will be influenced by greater inter-personal communication. The *juridical* aspect encompasses due and responsibilities. But in comparison between those hospitals, the reasons for a difference are not quite clear. The responsibilities are obvious for health care providers in hospitals that use electronic medical records. There are some physician issues taken over by the nurses. The policy and procedure are available in hospitals system for health care users in those hospital that use EMR, and the users update occasionally if there any changes e.g. in mission vision and so on.

Although hospitals 1 and 3 are using EMR, some physicians continue to ask nurses to go beyond their own roles and take on aspects of the physician's work e.g. entering the prescriptions medication. This stands at odds with hospital wide policy which makes it clear that shifting roles and responsibilities is unacceptable, still some physicians fail to heed hospital policy. However, *formative* aspect emerges as being higher in hospitals which use the paper records. This was unexpected; initially the researcher expected more *formative* in hospitals that made use of electronic medical records. *Formative* aspect relates to achieving and processing. The researcher was under the assumption that EMR system use would allow simplify work processes and allow for greater efficiency. The findings relating to the *formative* aspect have allowed the researcher to recognise there are some *formative* issues such as training, computer skills, etc. which shape this aspect in hospitals using EMR

Likewise, *pistic* aspect emerges as being more meaningful for hospitals that use electronic medical records. *Pistic* aspect concerns of vision and belief, so the users of electronic medical records can judge or find out the difference of uses and the preferences between electronic and paper medical records. It can be seen from the above bar chart there is a difference in *analytical* aspect but, no reasons for this can be found in the researcher's experience. As such, a qualitative analysis might uncover some reasons for this and shed further light. Surprisingly, the difference between paper and electronic, in terms of their down-to-earth issues, is not as great as we might expect from the discussions in the literature, which were mainly about high level issues.

6.2.5 Qualitative comparison among Hospitals

Despite operating in the same sector and offering the same type of core services, the hospitals used in this study remain distinctly different when compared. As such, each hospital has its own atmosphere and circumstance e.g. locations, type of patient, staff performance, culture and background, nationality and religion. This section makes a qualitative comparison between the types of meaningful issues amongst the four hospitals, to investigate whether there are differences in types of issues which affect them. There was some similarity in quantitative comparison in the above sections between the four hospitals, however there is a need for qualitative comparison to find out whether the types of issues are different. It may be that the culture and situation of each hospital changes the profile of Down To Earth Issues.

This is achieved by comparing the lists of types of group of juridical formative and lingual issues for hospitals found in 5.5. Those are aspects with sufficient numbers to make a comparison meaningful among the four hospitals. However, the four hospitals that have been mentioned are not in numerical order as hospital 1 and 3 are currently using EMR while hospital 2 and 4 made use of paper records. The three major meaningful aspects for hospital profiles are juridical, formative and lingual which are the most meaningful aspects for the users, with the most aspectual issues. For these three aspects, two tables are created. The first counts the number of aspectual issues of each type from section 5.5 for each hospital. The second table shows the most meaningful theme in order of priority 1st, 2nd and 3rd for each hospital.

The following table shows the type of issues group of juridical aspect for each hospital side by side. The first column shows the group of juridical issues. The second and third column show the number of issues in that group that are meaningful to users in hospitals one and three and the last two columns do the same for hospitals two and four. The same technique is used for the formative and lingual groups of issues.

Juridical group	Hospital 1	Hospital 3	Hospital 2	Hospital 4
Properly in work	6	6	4	0
Properly for documentation	5	5	2	1
Nurses' responsibilities	4	2	4	1
Accessibility	4	2	2	0
Staff responsibilities	1	0	3	1
Properly for patient care	1	1	1	0

Table 6-5 Table of qualitative group of juridical issues by hospital

From this we can list aspectual issues from hospitals in priority order as follows.

	H.1	H.3	H.2	H.4
1 ST	Properly in work	Properly in work	Nurses' responsibilities Properly in work	Nurses' responsibilities / Properly for documentation Staff responsibility
2 ND	Properly for	Properly for	Staff	

	documentation	documentation	responsibilities	
3 RD	Nurses' responsibilities / Accessibility	Nurses' responsibilities/ Accessibility	Accessibility/ Properly for documentation	

We can see some differences here. “Properly in work” seems as the first priority for H.1 and H.3 while “Nurse Responsibility” has priority for H.2 and H.4. That may be because these hospitals use the EMR and depend on technology, while H.2 and H.4 considers nurses as a central to deal with patient information. From the above table it seems that the types of issue are similar among three hospitals. The hospitals H.1 and H.3 had electronic medical records and hospitals H.2 and H.4 had paper medical record. Even though there are cultural and location differences between the hospitals, these do not seem to have an affect upon what healthcare workers think is important in the juridical aspect. So culture difference might not always have an effect.

In H.4 the number of interviewees was too low to give any significant findings. The following table shows qualitative group of Formative.

Formative group	Hospital 1	Hospital 3	Hospital 2	Hospital 4
Achieving work	11	3	6	4
Processing work	2	2	3	1
Improving and development	2	2	4	0
Quality of hospital system	5	2	4	0
Create/design for patient file	0	3	2	1
Hospital policy and procedure	1	2	0	1
Patient care	0	1	1	1

Table 6-6 Table of qualitative group of Formative issues by hospital

From this we can list aspectual issues from hospitals in priority order as follows.

	H.1	H.3	H.2	H.4
1 st	Achieving work	Achieving work// create and design for patient file.	Achieving work	Achieving work Hospital policy and procedure
2 nd	Quality of Hospital system	Quality of Hospital system / improving and	Quality of Hospital system /	

		development/ Hospital policy and procedure	improving and development	
3 rd	Processing work/ improving and development	Processing work	Processing work	

“Achieving work” seems as the first priority for the four hospitals. Except for H.4 (low numbers of interviewee), quality of hospital system is second priority for all hospitals, and processing work is third priority for all hospitals. Although each hospital has different circumstance such as hospital location, type of patient and culture background of the employee, these results look similar among those hospitals. However, we can see some differences here. “Create, design for patient file” is important for H.3 because this hospital in a competition with H.1 and also it follows the quality assurance to develop their patient files.

H.3 finds Quality of Hospital system, improving and development, Hospital policy and procedure meaningful, which might because H.3 is using EMR and is quite interested in monitoring, to assess the quality of work. H.4 has priority also in “Hospital policy and procedure”, which could be because H.4 intends to improve the work process by using process and procedure for all hospital departments.

The earlier table suggests greater importance of achieving work issues at hospital H.1. That could be because of the overload of work in that hospital. In particular, the number of patient usually high and increase during Ramadan as well as Hajj.

The following table shows qualitative group of Lingual.

Lingual group	Hospital 1	Hospital 3	Hospital 2	Hospital 4
Patient records	12	3	4	3
Documentation or information	1	3	1	0
Activities with records	2	1	7	6
Staff communication	4	0	3	0
Patient communication	0	1	1	0
Outsider communication	2	0	0	0
Learning / training	3	0	1	0

Table 6-7 of qualitative group of Lingual issues by hospital

From this we can list aspectual issues from hospitals in priority order as follows.

	H.1	H.3	H.2	H.4
1 st	Patient records	Patient records/ Documentation or information	Activities with records	Activities with records
2 nd	Staff communication	Activities with records/ patient communication	Patient records	Patient records
3 rd	Learning/ training		Staff communication	

We can see some differences here. “Patient records” seems as the first priority for H.1 and H.3 while “Activities with records” is first priority for H.2 and H.4. That may be because these hospitals use the EMR and still use paper records, so, they want to be sure both paper and electronic records are used properly at the same time, while H.2 and H.4 use paper records that might need more activities to deal with patient information.

The above table shows there is a difference in the 'patient records' issued at hospital H.1. That could be because of the numbers of patients in that hospital, in particular, the number of patients is usually high and increased during Ramadan as well as Hajj.

Although each hospital has different circumstances, such as location, type of patient and cultural background of the employee, the rest of the results look similar among the hospitals. Each hospital has its own DTE issues that differ from other hospitals, which means it is not necessary that all hospitals have the same DTE issues, so if we want to design electronic medical records, we should study DTE issues for each hospital. We might need different "special" electronic medical record for each hospital or one that would be modified for hospital needs.

6.3 Comparison of DTE Issues between Nurses and Other Health care Providers

6.3.1 Nurses Quantitative Comparison

This section compares Down To Earth issues of health records use between the nurses and the other health care providers. The reasons for performing this analysis are driven by the fact that doing so enables us to discover if the culture and background of the nurses and others changes the profile of Down To Earth Issues. This was achieved by splitting the source table shown in section 5.4, into two tables, one for the nurse and another table combined all the others (physicians, coders, clerking, administrative and technician) to create the following two tables of count and percentages.

Aspect	Nurses	Others
Quantitative	0	1
Spatial	6	0
Kinematic	1	3
Physical	2	4
Biotic	0	0
Psychic	2	0
Analytic	15	13
Formative	33	31
Lingual	25	33
Social	9	6
Economic	17	20
Aesthetic	2	0
Juridical	31	25
Ethical	3	2
Pistic	10	9
TOTAL	156	147

Table 6-7 Amount and percentages of interest in each aspect for nurse and others

Aspect	% Aspects for Nurses	% Aspects for Others
Quantitative	0.00%	0.68%
Spatial	3.85%	0.00%
Kinematic	0.64%	2.04%
Physical	1.28%	2.72%
Biotic	0.00%	0.00%
Psychic	1.28%	0.00%
Analytic	9.62%	8.84%
Formative	21.15%	21.09%
Lingual	16.03%	22.45%
Social	5.77%	4.08%
Economic	10.90%	13.61%
Aesthetic	1.28%	0.00%
Juridical	19.87%	17.01%
Ethical	1.92%	1.36%
Pistic	6.4%	6.12%
TOTAL	100%	100%

Table 6-8 Percentages of interest in each aspect for nurses and others

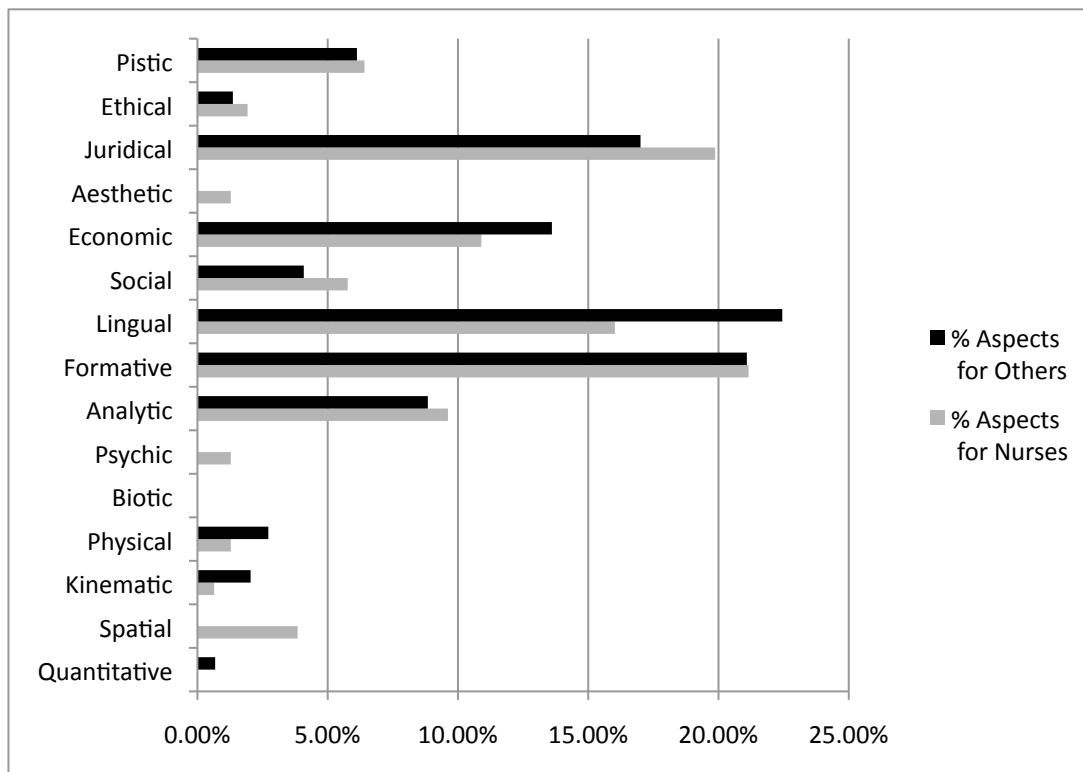


Figure 6-4 Bar chart shows the percentages of interest in each aspect for nurses and others

6.3.2 An Analysis of the Bar Charts

The above bar charts compare the meaningful aspects for nurses with meaningful aspects for other health care providers such as IT and medical records technicians, clerks, administrative roles and physicians in four hospitals across Saudi Arabia.

Nurses seem interested in most of aspects with slight differences from others. The researcher expected the slight difference as nurses and other healthcare providers work in the same hospitals and follow the same rules and regulations. Multinational and cultural backgrounds of healthcare providers might have affected the results of the analysis. Three aspects need to be discussed in particular, as those demonstrated the most difference; Spatial, Social, Lingual and Ethical.

The Spatial aspect is significant and meaningful for nurses but not for the other health care providers. Usually nurses are concerned about the space of places, both inside and out. This relates not only to patients but also to patients' medical records as nurses treat both patients and medical records with the same importance and value. In that sense nurses give attention

in regards where to keep patient files. The following quote by a participant nurse (T.20;N.7.4) sheds light on this:

“If the patient comes to us from the clinics, we do all the procedures; we write the name of the patient, and we do the admission procedures. The file comes from medical records and other papers come from here”.

“From clinics or emergency”

“The file comes from medical records and other papers come from here”.

Furthermore, nurses use patient records regularly more so than the others. For example, if the physician or other health care providers need medical records, most often than not they inquire after the nurse to perform the necessary task. Nurses release only the necessary and required patient information.

The above bar chart illustrates that the Social aspect appears to be more meaningful for nurses. This is to be expected due to the fact that nurses communicate with all healthcare providers such as the physicians and patients. The following examples show the role of the nurses in patient medical records and the communicated concept of “we”, referring to working as group with other nurses etc.

T.1 (N.3.2) mentioned.

“Meet to take such a decision”

T.20 (N.7.4) said

“We do the admission procedures”

Furthermore, nurses also contact the patients’ relatives, spent more time with patients staying in hospital and contact other units in case the patient needs to move to another ward or to the operation theatre.

The Ethical aspect seems more meaningful for the nurses, which is also expected, since the “Ethical” aspect reflects the notion of self-giving, e.g.

T.6 (N.2.1) said:

“I can’t speak for other nurses”.

T.29 (N.14.2) said:

“I apply my good skills to care for the patient”.

Nurses concentrate more on the patient in order to provide good care for them.

The Lingual aspect seems less meaningful for the nurses, yet the reasons are not quite clear. The possibility could be that the other users of medical records have different types of Lingual issues compared to the nurses' issues; a qualitative comparison of issues is discussed below.

Nurses and others health care providers seem equally interested in five aspects:

The Pistic aspect seems meaningful for both nurses and other healthcare providers. It might mean that they work in one wheel and both are doing their best efforts to get the successful results

Juridical aspects convey slightly more interest from nurses. That is not surprising. Usually, nurses connect all the others healthcare providers together, also cooperating with patients and their families. Moreover, nurses have a lot of responsibilities so are needed to focus more on their job role.

The Fformative aspect seems equally important for both nurses and other healthcare providers. That might be expected as they have the same aim to achieve; that is patient services and to provide good quality health services for patients. The ananalytic aspect seemed meaningful for both. The reasons for that are not quite clear but it could be because there are some issues that are not clear for them and they need to investigate these issues. The Qquantitative aspect seems equally interesting but did not score highly. Again, the reasons are also not clear. Qualitative analysis in the next section might reveal more.

6.3.3 Qualitative comparison between Nurses and Others

The comparison between nurses and other healthcare providers explores the meaningful Down to Earth issues which reveal the different points of view of each type of practitioner. This section demonstrates the qualitative comparison between the types of meaningful issues between nurses and others e.g. physicians, technician coders, ward clerks and administrators to investigate whether there are differences in types of issues among them. While there is similarity in the quantitative comparison in section 6.3.1 between nurses and other staff, there is still a need for a qualitative comparison to find out whether the type of issues are

different. The culture, background and situation of each role might change the types of Down to Earth Issues in each aspect.

This is achieved by comparing the lists of types of groups of juridical and formative issues between nurses and others healthcare providers found in section 5.5.

The following table shows the type of issues of juridical groups between nurse sand others, side by side. The first column shows the group of juridical issues, then the second and third column present the nurses and others. The same technique is used for formative and lingual groups of issues.

Juridical group	Nurses	Others
Properly in work	12	4
Properly for documentation	7	6
Nurses' responsibilities	7	4
Accessibility	4	4
Staff responsibilities	0	5
Properly for patient care	2	1

Table 6-9 Qualitative group of juridical

From this it is possible to list aspectual issues from hospitals in terms of priority as follow:

	Nurses	Others
1 st	Properly in work	Properly for documentation
2 nd	Properly for documentation/ nurses responsibilities	Staff responsibilities
3 rd	Accessibility	Properly in work/ Nurses' responsibilities/ Accessibility

“Properly in work” seems to be the first priority for nurses and “nurse’s responsibilities” are second priority for nurses. From the above table, "Properly in work" is meaningful to nurses, while "Properly for documentation" is the first priority for others. The reason why "Properly in work" is most meaningful for nurses might be because, usually, the nurses try to work hard in their work and provide good quality of care. Another reason might be that nurses are challenged in their work and seek to improve their knowledge. A reason why others are more concerned about the proper documentation for patients might be that others focus on the

documents for patients. For example, technicians focus on the documents required upon admission or during hospital stay. There is a significant difference between nurses and others about "Staff responsibilities". This might be because the nurses know their required job and focus more on patient care than the others do.

The following table demonstrates the qualitative group of Formative issues.

Formative group	Nurses	Others
Achieving work	13	11
Processing work	4	4
Improving and development	6	2
Quality of hospital system	2	9
Create/design for patient file	5	1
Hospital policy and procedure	3	1
Patient care	3	0

Table 6-10 Table of qualitative group of Formative

From this we can list aspectual issues in priority order as follows.

	Nurses	Others
1 st	Achieving work	Achieving work
2 nd	Improving and development	Quality of hospital system
3 rd	Create, design for patient file	Processing work

There are indeed similarities here. "Achieving work" seems to be the first priority for nurses and other users; that is no wonder, since both of these groups aim to achieve the work. From the above table the formative aspect is more significant for the nurses than the other employees. E.g. improving and development seems of more interest for nurses. That might be due to the fact that nurses are involved in everything related to the patient to provide good quality services for patients, while the other employees might be focusing more on the system, etc. Even though the nursing job is considered the busiest job, the nurses try to use their efforts to achieve all the types of work that relates to patients, such as the patient himself/herself, patient medical records - either paper or electronic files, etc. On the other hand, the rest of employees deal more with patient documents and less with the patients themselves.

Lingual group	Nurses	Others
Patient records	7	15
Documentation or information	5	0
Activities with records	12	4
Staff communication	1	6
Patient communication	2	0
Outsider communication	0	2
Learning / training	2	2

Table 6-11 Table of qualitative group of Lingual

From this it is possible to list aspectual issues in order of as follows.

	Nurses	Others
1 st	Activities with records	Patient records
2 nd	Patient records	Staff communication
3 rd	Documentation or information	Activities with records

The above table shows that "Activities with records" is the first priority for nurses and "Patient records" is the first priority for others. A reason for this might be because; nurses usually do all their "activities with patient records" such as endorsement and communication with other nurses via the patient record. Therefore, nurses monitor patient records and nurses interact with the information within patient records. This is what the qualitative issue of "Activities with records" refers to.

On the other hand, the other employees (especially technicians) have less access to the information within the records. Technicians only pull/ return patient records to the shelf but do not interact with the information within patient records. They deal with "patient records" as whole entities, whereas nurses interact with the information inside them ("Activities with records"), as well as records as a whole ("Patient records").

6.4 Saudi and Foreigner Quantitative Comparison

This section compares Down to Earth issues of health records use between the nationalities of users that are Saudi and non-Saudi (foreigners). The reasons for doing this analysis are because it enables us to find out if the nationalities of the healthcare providers change the profile of Down to Earth Issues. This was achieved by extracting the transcripts of Saudi and

non-Saudi (foreigners) from the source table shown in section 4.4, and create two tables, one for the Saudi participants and another table for the foreigners.

Aspect	Saudi	Foreigners
Quantitative	1	0
Spatial	0	6
Kinematic	2	2
Physical	3	3
Biotic	0	0
Psychic	0	2
Analytic	14	14
Formative	22	42
Lingual	22	36
Social	5	10
Economic	16	21
Aesthetic	0	2
Juridical	22	34
Ethical	3	2
Pistic	8	11
TOTAL	118	185

Table 6-12 the amount of interest in each aspect for Saudi and Foreigners

Aspect	% of Aspects for Saudi	% of Aspects for Foreigners
Quantitative	0.85%	0.00%
Spatial	0.00%	3.24%
Kinematic	1.69%	1.08%
Physical	2.54%	1.62%
Biotic	0.00%	0.00%
Psychic	0.00%	1.08%
Analytic	11.86%	7.57%
Formative	18.64%	22.70%
Lingual	18.64%	19.46%
Social	4.24%	5.41%
Economic	13.56%	11.35%
Aesthetic	0.00%	1.08%
Juridical	18.64%	18.38%
Ethical	2.54%	1.08%
Pistic	6.78%	5.95%
TOTAL	100%	100%

Table 6-13 the percentages of interest in each aspect for Saudi and foreigners

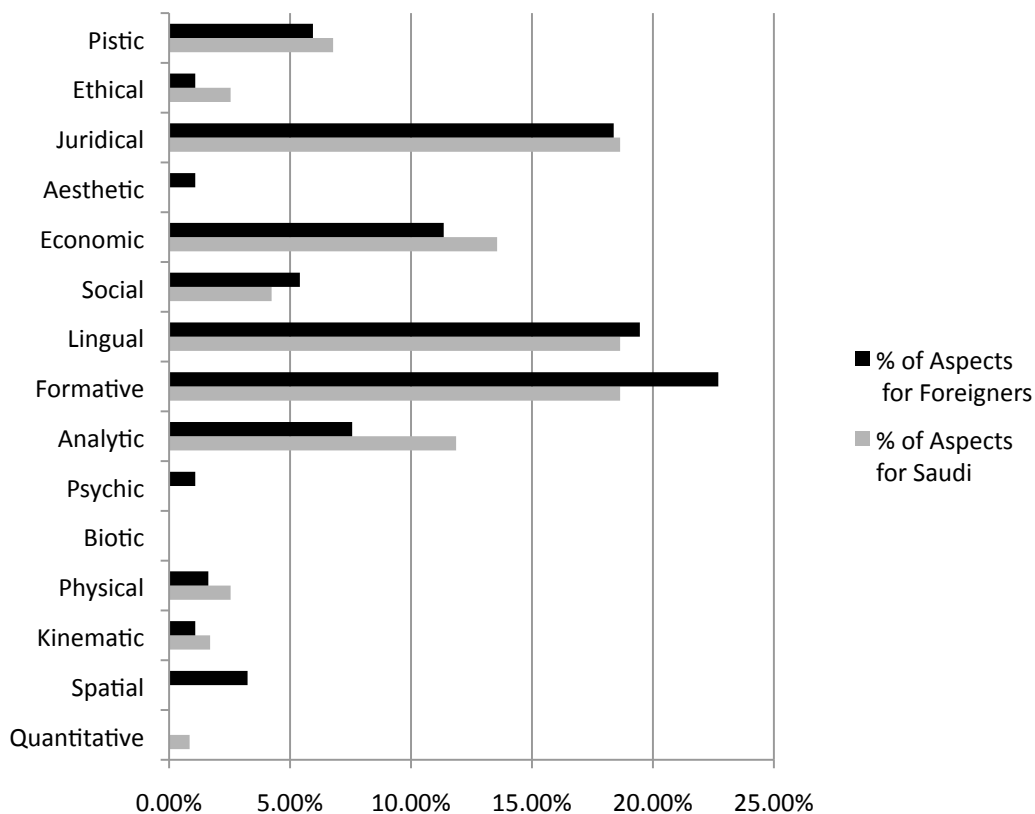


Figure 6-4 bar chart shows the percentages of interest in each aspect for Saudi and Foreigners

6.4.1 Discussing the Bar Charts

The Analytical aspect seems of more interest for Saudis than to foreigners. This could uncover difficulty caused by the patient medical records being in English and that some of foreigner users speak English fluently. That might cause Saudis to look for support from their colleagues, the “foreigners”.

The Ethical aspect looks more meaningful for Saudis than foreigners. The Saudis wishing to improve their work in order to stay in the workplace for many years could explain that; there is currently a policy of 'Saudization' underway.

The Economic aspect is slightly more meaningful for Saudi than for Foreigners. It may be due to the cultural background, in that the Saudi culture finds confusion of resources, (time, etc.) or takes them for granted, unlike the foreigners who come for work and respect the rules.

The Spatial aspect seems more meaningful for the foreigners than for the Saudis. That may be due to the foreigners having more experience than the Saudis. That made them more careful

about where to put the records because of the security and hazards. There is more interest for foreigners in the formative aspect. That might uncover the fact that because the foreigners have different backgrounds, both culturally and in terms of education, they may have advanced knowledge in medical records uses.

The Social aspect is slightly more mentioned by the foreigners rather than the Saudis. It could be because the official language in hospital is the English language and the Saudis do not know enough of the English language to communicate with other healthcare providers. Another reason could be because the foreigners still feel they are new and not involved yet in Saudi society. Qualitative analysis of the lingual aspect below will help to answer these questions.

The Lingual aspect is also slightly more meaningful for foreigners than for Saudis. The reason for that may be because the foreigners practice work sufficiently as they have more experience, different cultures etc.

The Pistic aspect seems similar in both cohorts, meaning that Saudis and foreigners may have the same vision and beliefs. That may be expected as both nationalities follow the same hospital policy and procedures, even though they are different in background, work experience etc.

The Juridical aspect is meaningful for both cohorts. Saudis and foreigners seem aware of the importance of doing right in their work whether the hospital uses paper or electronic records. Although they appear quantitatively similar, they might be qualitatively different.

The quantitative aspectual analysis reveals the different amounts of interest between nationalities and shows how the various cultural backgrounds might change the aspectual profile e.g. analytical aspects seems of more interest for Saudis than to foreigners.

There are qualitative comparisons between Saudis and foreigners in the next section that discusses this more.

6.4.2 Qualitative comparison between Saudi and Foreigner

This section presents the qualitative comparison of the types of meaningful issues between Saudis and foreigners, In order to investigate if the nationalities of the healthcare providers changes the types of apparent Down to Earth Issues. Although the foreigners seemed interested in most of the aspects in a slightly different manner compared to the Saudis in quantitative comparison in Section 6.4.1, there still is a need for qualitative comparison to discern whether the type of issues differ. This is achieved by comparing the lists of types of groups of juridical and formative issues, as is done between nurses and others found in Section 6.3.

The following table shows the type of juridical issues between Saudis and foreigners in a side by side comparison. The first column shows the group of juridical issues and the second and third column present the Saudis and foreigners, respectively. The same technique is used for formative and lingual groups of issues.

Juridical group	Saudi	Foreigner
Properly in work	4	12
Properly for documentation	5	8
Nurses' responsibilities	5	6
Accessibility	3	5
Staff responsibilities	4	1
Properly for patient care	1	2

Table 6-14 Table of qualitative issues of juridical group.

From this we can list aspectual issues in priority order as follows.

	Saudi	Foreigner
1 st	Properly for documentation /Nurse' responsibilities	Properly in work
2 nd	Staff responsibilities / Properly in work	Properly for documentation
3 rd	Accessibility	Nurse' responsibilities

The differences are apparent here. "Properly for documentation" and "Nurse responsibilities" seems to be the first priority for Saudis, while "Properly in work" is the first priority for foreigners. That may be due to cultural issues, as Saudi staff depend on and trust nurses.

Another reason might be because of language barriers - foreigners speak English fluently. Therefore foreigners focus in work properly and can usually adopt the new culture.

To foreigners, "Properly in work" is a highly meaningful issue. That might be explained as follows. Usually, foreigners concentrate on their work rather than their social life, because for example, they live away from their families and that keeps their mind busy and so they focus more on their work life. From the researcher's experience, the Saudi staff request days off and most of the time the Saudis refuse to work in the afternoon or night shifts. The reason they gave was family issues such as maternity. Also the foreigners live in the accommodation attached to hospitals or if it is far from the hospital, usually there are buses for the foreigners to take them to hospital. But the Saudi staff, especially the ladies, sometimes come late to work because of transportation issues.

Note, the ratio 12:4 for the nurses versus others that are mentioned earlier is not the same ratio of 4:12 for the Saudis and foreigners. Even though they seem similar, looking at the lists of juridical issues in Section 5.5 shows that roles and nationalities are independent of each other.

The following table shows the qualitative group of Formative.

Formative group	Saudi	Foreigner
Achieving work	7	16
Processing work	2	7
Improving and development	4	4
Quality of hospital system	6	5
Create/design for patient file	1	5
Hospital policy and procedure	1	3
Patient care	1	2

Table 6-15 Table of qualitative group of Formative

It is then possible to list aspectual issues in priority order as follows.

	Saudi	Foreigner
1 st	Achieving work	Achieving work
2 nd	Quality of hospital	Processing work

	system	
3 rd	Improving and development	Quality of hospital system / Create, design for patient file

We can see “Achieving work” appears to be the first priority for both Saudis and foreigners. That is no wonder, as although both of them have different cultures, both are focusing in achieving work

From the above table the Formative aspect appears to be more significant to the foreigners, which was expected because the non-Saudi (foreigners) have different backgrounds, cultures and educations. The non-Saudi (foreigners) may have more advanced knowledge in medical records uses.

However, Quality of system is split equally between Saudis and non-Saudis.

Lingual group	Saudi	Foreigner
Patient records	11	11
Documentation or information	1	4
Activities with records	3	13
Staff communication	6	1
Patient communication	0	2
Outsider communication	0	2
Learning / training	1	3

Table 6-16 Table of qualitative group of Lingual

From this it is possible to list aspectual issues in priority order as follow

	Saudi	Foreigner
1 st	Patient records	Activities with records
2 nd	Staff communication	Patient records
3 rd	Activities with records	Documentation or information

The differences are evident here. “Patient records” appear to be the first priority for Saudis, while “Activities with records” is the first priority for foreigners. That may be because Saudis are assigned to deal with patient record in the general sense such as keeping the patient file in the station but foreigners usually deal with patient records quite often so as to endorse to physicians or other users

The above table illustrates “Patient records” are split equally between Saudis and foreigners; that may be due to the awareness of the value of patient records among the employees in each hospital.

“Staff communication” is apparently more meaningful to Saudis. That might be because the majority of the employees are Saudi nationals. However, the results of foreigners show more significance than that of the Saudis.

6.5 Chapter Summary

In most cases, aspectual difference can uncover what is going on in health care sectors. Discussion of quantitative results has been conducted for the aspects with the most issues as these seem significant or the highest aspects between the cohorts. Other aspects could have been analysed in the same manner. Furthermore, other cohorts could be studied in the same way. Other aspects could be studied qualitatively and other cohort comparisons could be made, such as a male versus female.

Aspectual issues are revealed per cohort; this helps to understand how design and evaluation of EMR can be suited to each cohort. Qualitative and quantitative aspectual analysis allows the ability to uncover the reasons between the meaningful issues in hospital 1 and 2 as both use EMR, as well as paper records. That also reveals the meaningful issues between cohorts. The aspect classify at a top level. Qualitative coding within aspects can classify at the next level. Coding within aspects rather than from the raw data makes qualitative coding easier.

CHAPTER SEVEN: Discussion of Methodology of this research

7.1 Introduction:

This chapter explores the usefulness of applying Dooyeweerd's aspects in the investigation of meaningful issues of EMR users. Each section in chapter 7 provides a reflection as follows:

Section 7.2 discusses the reflection on comparisons of users with papers

Section 7.3 discusses the reflection on Aspectual Analysis

Section 7.4 discusses the reflection on impact of researchers' experience

Section 7.5 concluding discussion

7.2 Reflection on Comparisons of users with papers

This section provides a discussion of the meaningful DTE issues that emerged from the findings within the context of existing literature and research. As such, eight papers have been analysed in order to bring to light the Down to Earth issues that are mentioned. The results of the analysis are found in Appendix.2. Before comparing users of this study with the established literature, this section describes how the papers are selected and the manner in which the excerpts are extracted. In addition to this, a description of the way in which the aspectual interpretation analysis was conducted will also be outlined. The aspectual interpretation and analysis are carried out in the similar way to that for users in chapter 5. The comparison is with eight papers and thus should be seen as a pilot study.

7.2.1 Selection of papers

The following papers are those which mention down to earth issues. The literature on EMR remains varied whilst the issues addressed within the literature seem to be very wide, and at several levels. As was shown in Chapter 2, many of the issues in literature are at a high or general level, of interest mainly to management rather than EMR users, often arising as gross perceived or expected benefits of the EMR system as a whole, such as: reduction in medical errors in health care (Wang et al. 2003); storage and exchange of health information, patient safety and continuity of care (Urquhart et al 2009); improved billing and cash flow, enhanced revenue, reduced paper, printing and transcribing costs, improved utilisation of tests, reduced recruitment costs (due to retention), improved quality of care, improved safety, improved patient education, improved co-ordination of care, and simplification of research-related processes (Beiter et al 2008). Such issues are well known and repeatedly mentioned; they are high-level issues that are of interest to management and researchers.

Less often mentioned are the kinds of issues that are meaningful to users of EMR and that directly influence success or failure of EMR in use. As Beiter et al. (2008) suggest, there is a paucity of papers that discuss the impact of EMR. In the general realm of information systems use, Ahmad and Basden (2013) call them "down-to-earth" issues. In the realm of EMR, they are issues that, once known, can help us design or evaluate EMR. The literature on such issues is much smaller than that which discusses higher-level issues.

The papers selected are those that mention down to earth issues and in which the authors have actual experience of using health records, and have discussed either transition from paper to electronic records or experience of having made this transition. Authors seldom discuss down-to-earth issues of health record use directly, but sometimes mention them indirectly in connection with other themes. Eight papers have been analysed in depth so far, and these analyses are described in this chapter. They are (Miller & Sim 2004; Arar et al. 2005; Crane & Crane 2006; Green & Thomas 2008; Beiter et al. 2008; Protti et al.'s 2008; Dambergh et al. 2010; Ventura et al. 2011; Shachak et al. 2012). , Excerpts from them are analysed and can be found in appendix 2.

7.2.2 Extracting Issues from the Papers

Passages from each paper are analysed in depth, using Dooyeweerd's aspects, in order to identify issues that are meaningful to the authors of literature. For each passage, phrases have been interpreted by aspects to understand the aspectual meaningful issues. The analysis for these eight papers is similar to one carried out in chapter 5 for users, and the results are given in the Appendix 2. Each table contains three columns; column three has the text from the paper with the page number. Column one has aspects that make it meaningful; column two contains the issues many of which are down to earth.

7.2.3 Counts of Aspects in the Papers

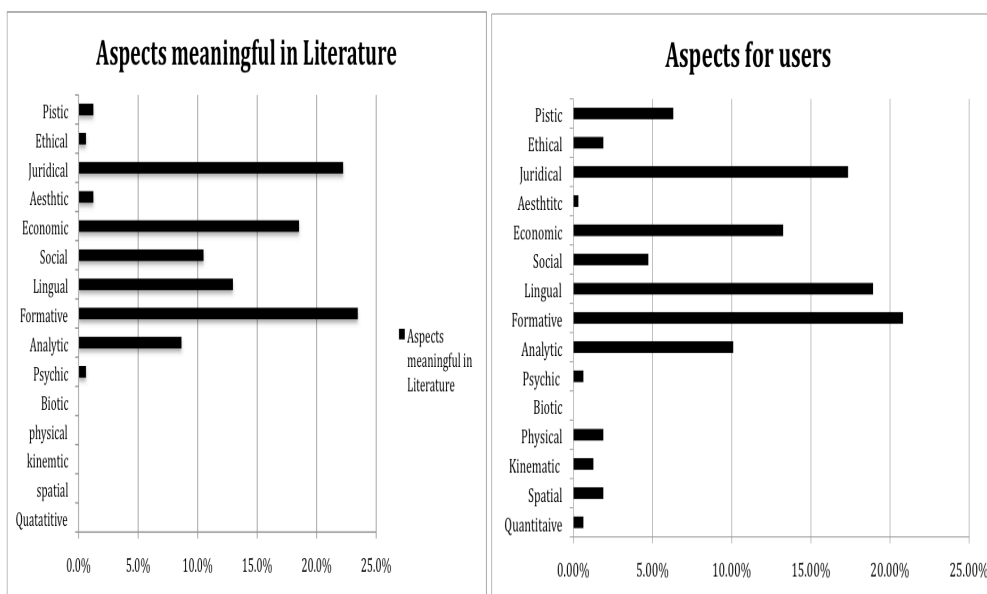
This section presents a table of counts similar to that for users in Chapter 5. It includes three columns. The first column contains Dooyeweerd's fifteen aspects, the second column contain the numbers of times each aspect is meaningful in the eight papers and the third column includes the percentage of each aspect across all the above papers as follows:

Aspects	Meaningful in Eight papers	Percentage of meaningful issues in Eight papers
Quantitative	0	0%
Spatial	0	0%
Kinematic	0	0%
Physical	0	0%
Biotic	0	0%
Psychic	1	0.62%
Analytic	14	8.64%
Formative	38	23.46%
Lingual	21	12.96%
Social	17	10.49%
Economic	30	18.52%
Aesthetic	2	1.23%
Juridical	36	22.22%
Ethical	1	0.62%
Pistic	2	1.23%
Total	162	100%

Table 7-1 number and percentage of Aspectual meaningful issues in eight papers

7.2.4 Quantitative Comparison between Users and Papers

This bar chart brings together the percentages of both users, from Chapter 5, and the literature from above. It shows the aspectual profile of meaningful issues for users and literature together, in order to compare them.



From the pattern of two sets of bars in the chart it can be seen that some aspects are meaningful to both literature and users, while others are of minor importance to both. Some of the aspects are more important to one cohort than the other. As seen from the graph, both the literature and users widely believe formative, juridical and economic aspects as particularly meaningful. Lingual, social and analytic aspects are also considered to be meaningful but there is a difference of opinion between the groups with respect to their importance.

Similarity: Three main aspects Formative, Economic and, Juridical are highly meaningful to users and literature. The users find the formative and juridical aspects appreciably more important. The economic is the second-height in the literature and slightly less important for the users.

Similarity: Ethical, aesthetic and psychic aspects are less meaningful for both literature and users. The factors of least importance to both the users and literature are the aesthetic and early aspects. For users, these aspects are of more importance than the literature.

Similarity: Analytical aspects are of approximately equal meaningfulness in the two cohorts. That might be because the users need to investigate some issues related to EMR or patients, and literature might focus more on theories, placing less importance on daily life and practical reality.

Difference: The pre-human aspects such as biotic, physical, kinematic, spatial and quantitative are slightly meaningful to the users while no significance is being given to them by literature as can be seen through the bar diagram. That might be because the literature tends to focus on what is most important, and omit what is of minor importance for succinctness. Another reason in many cases, is that the early aspects are only important in supporting later aspects, which is the inter- aspect dependency discussed in chapter 3 section 3.3.3. However, the spatial aspect is important in it is own right.

Difference: Lingual issues are much more meaningful to users because usually users deal with patient files, while literature shows less interest in lingual issues, perhaps because the writers do not deal directly with users in hospitals.

Difference: Pistic issues are much more meaningful to users. The pistic aspect refers to what the MR users believe regarding the daily work in hospitals, while writers more likely think in the analytic aspect.

Difference: Social issues less meaningful to users and slightly more meaningful for literature. Usually MR users communicate in patient file such as endorsement between nurses and physicians.

Although there was some similarity in quantitative comparison in juridical, formative and economic aspects between the two sets, still there is a need for qualitative comparison to find out whether the type of issues are different.

7.2.5 Qualitative Comparison issues between Users and Papers.

This would be achieved by comparing the types of aspectual issues for users found in Chapter 5, section 5.5, with the types of aspectual issues for literature, which are listed in Appendix.2. The following table 7-2 contains fifteen aspects in the first column; the second and third Column includes the type of issues for users and for literature. Each row tries to match issues that have a similar meaning between users and literature. The numbers in brackets are of aspectual issues for users or literature; “none” refers to where there are no matching issues.

One reason why there are existing aspectual issues in the users column with “None” in the literature column may be because the users speak from their daily experience of EMR, while the authors do not. To give a better understanding of each of these aspects to the reader and to further elaborate the difference in the opinions, each aspect is individually discussed in comparison with the qualitative issues in chapter 5 in section 5.5.

The qualitative comparison has been applied between the meaningful issues for users and papers to investigate whether there are similarity and differences between them.

Aspect	Type of issues for users	Type of issues in Literature
Quantitative	Number of doctors (1)	None
Spatial	Keeping the information (4)	None
	Place of work (1)	

	Place of patient (1)	
Kinematic	Movement (4)	None
Physical	Physical work in office (4)	None
	Physical work for patient (2)	
Biotic	None	None
Psychic	Forgetting (2)	None
Analytic	Job difference when using EMR (11)	None
	Distinguishing the difference between EMR and PMR (6)	
	Clarification between patient and physician (6)	
	Explanation (5)	
	None	Categorise system problems (7)
Formative	Improving and development (8)	Improving communication (8)
		System development (2)
	Quality of hospital system (11)	
	Achieving work (24)	None
	Processing work (9)	Problems solving (5)
	None	Malfunctions (6)
	Create/ design for patient file (6)	None
	None	Barriers to be overcome (2)
	Hospital policy and procedure (4)	None
Patient care (3)	Effect on quality of care (10)	
Lingual	Patient records (22)	Information (8)
	Documentation or information (5)	
		Legibility (8)
	Activities with records (16)	None
	Staff communication (8)	Verbal communication (7)
	Patient communication (2)	
	Outsider communication (2)	
Learning / training (4)	Training and education (6)	
Social	Communication (10)	Relationship between patient

Social	Communication (10)	Relationship between patient and provider (6)
		Physician and nurses relationship (4)
		Interaction with patient (2)
	Group work (5)	Sharing (3)
	None	Standards (2)
Economic	Time resource (16)	None
	Information resource (7)	Information as recourses (6)
	Technical resource (7)	Limitation of work environments issues (3)
	General resource (8)	None
	None	Financial issues (11)
		Organization efficiencies (2)
Others (3)		
Aesthetic	Providing of care (1)	Coordination of care (1)
	Continuity of care (1)	
Juridical	Proper in work (16)	None
	Proper documentations (13)	
	Nurses responsibility (11)	
	None	Medical error (5)
		Barrier (4)
		Appropriate (5)
	Accessibility (9)	Privacy and confidentiality (4)
	Staff responsibility (5)	Non
Non	Accuracy (2)	
Proper patient care (3)	Patient safety (7)	
Ethical	Concern about patient (3)	Quality of care (2)
	Others (2)	None
	Concern about staff (1)	
Pistic	Beliefs in system (7)	None

	Beliefs in general recourses (6)	
	None	Coordination of care (1)

Table 7-2. Aspectual Qualitative comparison table between users and papers

The issues in the literature review are different from the issues for the users and the reasons for hidden issues might be different. Two things need to be explained about this table before users and literature can be compared: different phrases and spans. Different phrases in the columns of a row show the same concept even though they are different wording. The similarity of concept requires judgment because it might not be an exact match. For example, in the formative aspect we can see “processing work” and “solving problem” wording is different but the concept is formative, usually “processing work” refers to achieving work and during the achieving work users might face some problems so “solving problem” has a similar meaning to “processing work”.

Moreover, “Patient care” and “effect of quality of care” also have different wording but have a similar concept of the formative aspect: usually health-care givers provide “patient care”, therefore the hospitals need to improve “patient care” through measure and improve the “effect of quality of care”.

Some rows span two rows in the other column. For example, “improving and development” in users spans in literature “improving communications” and “system development”, while in the column of literature “systems development” spans both users “improving and development” and “quality of hospital system”, and “improving and development” in users perspective included system and communication usually users are looking for improving in every issues regards their work. Therefore, “improving communication and system development” impacts on “improving and development”.

Another example has been found in the lingual aspect in the literature column “information” spans both user “patient records” and “documentation or information”, while user “documentation or information” spans both literature “information” and “legibility”. Usually “information” refers to patient records or any information related to patient whether related to health or general information. So the “information” in literature expresses the documentation for users and vice-versa.

7.2.6 Qualitative comparison of issues in three main aspects

This section explores differences in qualitative issues between users and the literature, for the three main significant aspects, (juridical, formative and economic), which seem meaningful for EMR users and in the eight reviewed papers. In the above table aspectual issues exist in one column but none in the opposite side. The above table intends to provide understanding of the aspectual meaningful issues for EMR users and within literature, so the reasons for non-existing aspectual issues in EMR is discussed as follows:

1-Juridical aspect: The above table illustrates some issues that seem to be meaningful for the users but not for the literature, and vice versa. For example, “proper in work”, "proper documentation" and "nurse responsibility” do not exist in the literature, yet these are meaningful for the users in their daily work. In the literature there is little concern about these issues.

On the other hand for example, “medical error” is mentioned in the literature but users don’t mention them daily in hospitals; this issue has been discussed in the literature in a theoretical or academic perspective. Also discussed has been the solution of medical errors such as how to prevent medical errors and how to monitor medical errors. The users are involved daily in hospitals so either the users are not concerned about this issue, or, it might be for negligence reasons as there is not any monitoring process to discover medical errors.

Another issue looks at different perspectives of users and literature: "accessibility" is considered as one part of privacy and confidentiality. The users mentioned accessibility as meaningful for them, because the users access the system daily while literature mentioned “privacy and confidentiality” which seems to be a high level issue. Privacy and confidentiality are meaningful for literature because it is important to secure and control the system. However, users depend on the IT department for technical issues like privacy and confidentiality so it may be a matter of trust.

Moreover, “Patient safety” has been discussed in the literature but not mentioned as such by users. It is worth noting that much of the literature is written by scholars not as actively engaged in using medical records, including with patient care on the wards, as MR users are. For those working in the hospital with patients and records daily, “patient safety” might be an

issue they take for granted, so they would seldom mention it during open interviews. Users of the medical records concentrate more on how to service the patient and provide a good health care service and do the required task without explicit concern about patient safety or patient satisfaction.

2-Formative aspect: “Achieving work” seems meaningful for EMR users but not in the literature. Usually EMR users place more concern about work in terms of how to achieve their tasks e.g. physicians and nurses need to check all patients as outpatients and provide the services for patients, whereas medical record technicians need to release the patient records for outpatients daily. Therefore achieving work seems a more technical or practical concept because it is a main target in users' daily work. “Achieving work” is more DTE for users but less meaningful for the literature.

Another example in the formative aspect is “hospital policy and procedure,” which refers to guidelines on how to achieve work properly. This is more meaningful for EMR users involved in daily work, but “hospital policy and procedure” is not meaningful for the literature, as the authors are less involved inside hospitals.

3-Economic aspect: “Time resource” is meaningful for EMR users. For example, physicians are concerned about how much time they need to spend with each patient; nurses are concerned about the time to check patient vital signs then enter the information in records and medical record technicians are concerned about needing to release the required numbers of patient records for outpatients. By contrast, the authors of the literature are less interested in “time resource” because they are less involved in the daily time of EMR users and the nature of hospital daily life.

Another example in the economic aspect is “general resources.” This issue seems meaningful for EMR users but not meaningful for the literature. Usually “general resources” refers to hospital resources such as devices, computers, printers, ink, paper records etc. Users have more concerns about availability or shortage in any of these resources because these affect their work process e.g. physicians need computers to check EMR and nurses are concerned about computers availability in nurse stations as if there is no computer available, this will

delay the nurses work. The shortage of medical record technicians might delay the release of patient records.

Although some authors of the eight papers under review had hospital experience, perhaps they are less concerned about time as they can see the work in hospitals from a more holistic view.

7.2.7 Reflection on comparison between users and literature

There is a difference in the aspectual results between users and the literature. The aspectual analysis enables one to reveal, uncover and classify DTE issues that are not discussed in the literature but are meaningful for MR users. The difference implies that the literature is a poor guide to DTE issues. So issues should be found by aspectual analysis of use. However, that the comparison has revealed that users take same issues for granted implies that the literature has a part to play.

The literature focuses in some aspects much more than others. This raises the question whether these aspects are really important and the others are unimportant or whether it is due to research bias. This is discussed in the next two sections.

7.3 Reflection on Aspectual Analysis

The purpose of this section is to draw insights about the manner of using Dooyeweerd's aspects to identify DTE issues and then perform qualitative and qualitative analysis, as described in Chapters 5 and 6. In most cases, aspectual difference can be explained by what is going on in the health care sectors. This gives insight about the “how” of using Dooyeweerd’s aspects to study and reveal, uncover and classify DTE issues.

7.3.1 Reflection on Aspectual Interpretation

How might the understanding or experience of the researcher influence aspectual interpretation? Researchers will make deductions about what is meaningful in an utterance. If the researcher has experience, they can see deeper and the results might be those of different aspects. This is discussed in section 7.5. However, even if both researchers have the same or different experiences, they might assign different aspects for the same issues which are related to the researchers’ background.

Some issues can be interpreted with one aspect with no doubt, because the issues were obvious for the researcher and others. For example, T.4 (C.2.1) is meaningful in lingual aspect “Type, booking request, ensure, receive calls, booking patient appointment” (Doing documentation) T.7 (N.2.1) is meaningful in spatial aspect “Well, sometimes I have it on my counter”, (Asking about the place) T.8 (N.3.2) is meaningful in formative aspect “I already told you that lack of improvement and development”, (the nurse is emphasizing the lack of development). T.17 (N.6.3) is meaningful in economic aspect “I have 24 patients staying in the hospital for two weeks or more” (Mentioned number of inpatient in ICU and length of stay). T.24 (N.9.3) is meaningful in juridical aspect “If you are looking after a specific patient, he or she is responsible for all the work for that patient”, (providing required work properly, and taking care for each patient).

The following example are for aspectual meaningful issues for users where there is a possibility to assign two different aspects for the same issue. T.3 (N.1.2) “Focusing more on patient care” is meaningful in formative in terms of being more concerned about patient care as the main task as a nurse; or juridical aspect in terms of “Give more time” for patient doing her work as a nurse in proper duty of nurse to giving

For further study we can measure the analysis and results of Appendix.1. This could be measured by providing the data in appendix.1 to another researcher who has experience of Dooyeweerd's Aspects in order to apply an aspectual analysis.

7.3.2 Reflection on separating X from A

Dooyeweerd's Aspects help to focus on the meaningful issues for EMR users. The following table has Dooyeweerd's Aspects, which distinguishes between extra information that are coded with “X” and direct answers which coded with “A” that can be found in chapter 5 section 5.3.1. = During data collection, interviewees disclosed extra information that has been taken into account during analysis to gain deeper understanding of meaningful DTE in EMR uses. In this respect. “A” direct answer also has been taken into account but the researcher found “X” extra information enrich the results and given more DTE issues that are meaningful for users. Users table no. T.4 (C.2.1) shows the direct answer and extra information from interviewees.

	Aspect	Issues	Reasons
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Q. Aspect	Formative	Job description and your routine work	Asking about job description
A. Aspect	Analytical Lingual	Job description and your routine work...	Describing her routine work Saying her routine work in details
X	Lingual	Type, booking request, ensure, receive calls, booking patient appointment	Doing documentation
X	Juridical Social	Keep the files confidential between myself and physicians	Doing her job in proper or responsibility to keep patient confidential. Communicating between nurse and physicians
X	Juridical	Keep patients in proper beds and to ensure with the consultant that the patient is under care with him	Doing her job in right way

The researcher biases arising from beliefs that the work processes were done in Al-Noor hospital were correct until using Dooyeweerd's Aspects to analysis the aspectual meaningful issues, which helped to reduce the researcher bias and also to ensure each hospital had its own aspectual profile.

7.3.3 Quantitative analysis enables us to reveal DTE issues

Quantitative analysis can reveal the major difference between users and the literature in terms of the amount of interest of DTE issues between the others cohorts of the following:

- Hospitals.
- Electronic and paper hospitals.
- Nurse and others
- Saudi and Foreigners

However, it does not reveal issues themselves; those are revealed by the analysis of texts in Chapters 5 and 6.

7.3.4 Qualitative analysis enables to reveal DTE issues

Qualitative analysis enables one to highlight the differences between cohorts in terms of type of issues of interest in each parameter e.g. the juridical aspects between the nurse and others; “properly in work” shows nurses have more concerns in "properly in work" than others. Also Qualitative analysis shows foreigners are more interested in "properly in work" than Saudis. These differences between two cohorts motivated the researcher to discuss the reasons. This has been done for formative and juridical aspects as these aspects seem significant and are the highest rated aspects between the cohorts. Other aspects could be analysed the same way. Other cohorts could be studied in the same manner.

7.3.5 Quantitative analysis helps to uncover hidden issues

The issues in the literature review differ from the issues for the users. That stimulated the researcher to ask the reasons for the differences within the bar chart. Differences in other cohorts have been trending the same way e.g. the amount of interest for juridical aspects between hospitals.

7.3.6 Qualitative analysis helps to uncover hidden issues

The issues in the literature review are different from the issues for the users and the reasons for hidden issues might be due to different reasons. That stimulated the researcher to ask why there are differences between cohorts e.g. formative aspects such as “staff responsibilities”. Qualitative analysis enables one to achieve these three activities. The next chapter discusses that in more detail.

7.3.7 Quantitative analysis unable to classify DTE issues

Obviously, quantitative analysis was unable to classify the DTE issues by aspects. But quantitative analysis can provide aspectual profiles.

7.3.8 Qualitative analysis able to classify DTE issues

There are two levels of classifying. Aspectual analysis enables one to classify the DTE issues by aspects; then to classify the kind of DTE issues within each aspect. This revealed major differences between users and the literature in terms of the type of DTE issues and also revealed differences in the others cohorts of the following:

- Hospitals.
- Electronic and paper hospitals.
- Nurse and others.
- Saudi and Foreigners.
-

7.3.9 Overview of Aspectual Analysis

Dooyeweerd's Aspects helped to understand meaningful issues in EMR use. Through analysis, both qualitatively and quantitatively of DTE issues of hospitals, cohort of users and the literature as well as different cohorts of EMR users. In that respect, Dooyeweerd's Aspects enabled the researcher to reveal, uncover and classify the aspectual meaningful issues for EMR users.

7.4 Reflection on impact of researcher experience

The impact of the researcher's experience has been discussed by Dwyer (2009), who argues about issues relating to the researcher being an 'insider' or 'outsider'. To be an insider refers to the researchers having work experience or a similar background to participants.

Dwyer (2009) discusses how researcher bias arises from these roles and influences the research. To be an outsider refers to researchers not having similar work experience or background. Dwyer (2009) discusses the impact (benefits and problems) of being an insider and an outsider. In this section the impact on both interviewing and analysis are discussed.

7.4.1 The researcher's experience

The researcher experience considers herself as both an insider and outsider. The researcher had work experience, as an assistant medical record technician, for the first year, with orientation in each unit of a medical records department, then became a medical record technician and later assistant director for the same department. She worked in this hospital, Al-Noor, for five years. During the data collection period of this research, the researcher interviewed health care workers in four different hospitals in Mecca. The interviews started with the hospital where the researcher used to work (Al-Noor), then she interviewed health care workers at another three hospitals.

The researcher had a similar background to the participants, that is, as an "insider", especially in the first hospital but less so in the others, where she found their work processes to be rather different. She interviewed some colleagues who were medical record technicians. She knew

the work process at each unit in medical records and the way each connects to other units and other departments within the hospital. That helped her fully understand the work processes there and at some point, they (the employees) informed her about alternative new ways of work processes which were acceptable to her.

7.4.2 Impact on interview

That the researcher had a similar background with participants means there are some benefits as well as some problems. Since the researcher was quite familiar with the departments, members of health care e.g. physicians, nurses, technicians, and heads of departments this made it easy to arrange the interviews.

Dwyer (2009) mentions that one of the benefits of a researcher who is experienced is the “acceptance” this brings about between researcher and participants. The fact that the researcher had familiarity with work processes and empathise with the participants, placed the interviewees at ease. The benefits during interviews are several. For example, knowledge of patient process, of abbreviations, jargon and medical terms, as well as of hospital policy and procedure meant that the researcher did not need to ask too many questions to clarify things. This saved time and also the patience of participants. For example, knowing that there are records for both inpatients and outpatients, when a medical record technician said that 200 medical records had been sent to outpatients but at the end of the day but she received 150 patient records, the researcher did not need to ask about the other 50 because she expected the remaining records would be sent to inpatients.

Dwyer (2009) mentions some problems during interviews when the researcher has experience of those being researched under the research domain. One is researcher bias. For example, at first, the researcher had a passion about EMR and wanted to extract the same passion from them (the participants) and tried to convince them EMR is better than PMR. So there are a number of questions about which they prefer, but the interviewees usually gave extra information that was meaningful to them and it was this information that was used in analysis.

Researchers may have conflicts or confusion with their roles. For example, because the researcher had been an assistant director in the medical records department in Al-Noor hospital, at first she would sometimes bring her thoughts and beliefs to the three other

hospitals in order to convince the health care workers there that Al-Noor hospital had the best work process. However, as she heard of alternative ways of working, she came to recognise the validity of these alternatives.

During the interview for health care users in Al-Noor hospital, at some stage the researcher found herself interrupting the interviewee and tried to motivate them to say what she (the researcher) expected because she felt the way she did work in the past was the best technique; ultimately the researcher thought all participants should have followed her respective work process in order to achieve the required tasks at hand when working with medical records. This acted as a limitation of the research.

7.4.3 Impact on research analysis

The effect of researcher's experience during analysis can be positive and negative. A benefit during analysis of the researcher having experience of those being researched (being an insider) is that it helps the researcher during analysis in deducing the meaningful issues, grouping the issues and excluding non-meaningful issues. For example, when a medical record technician says 200 medical records has been sent to outpatients but, at the end of the day she received 150 patient records, with knowledge of the process around inpatients and outpatients, the researcher can expect the remaining records might be sent to inpatients.

Knowledge of abbreviations and jargon used among health care users and medical terms let the researcher understand what interviewees meant when a nurse mentioned that she forgot to enter the information in patient records before pointing out that there is a policy for late entry. This understanding of hospital policy and procedure lets the researcher know that this is not a problem. In addition, when some interviewees gave short answers, this was acceptable as the researcher already knew what they meant. Understanding the policy and procedure helps the researcher to understand the implication upon real life. Dwyer (2009) mentions problems during analysis of the researcher having experience of those being researched.

One of said problems is researcher bias. For example, during analysis the researcher gave priority to medical record technicians rather than physicians in choosing excerpts for analysis because they were under-represented in the literature: usually the literature is about

physicians and nurses. Another is that of researcher assumptions. For example, the researcher initially assigned some aspects incorrectly, but this occurred only once or twice.

7.4.4 Dooyeweerd's Aspects help overcome problems of having Experience

Analysis with Dooyeweerd's Aspects depends on the meaning not on the literal text. The interviews utilised open questions and the answers included meaningful issues from each interviewee. So Dooyeweerd's Aspects reveal the meaningful issues not from the text but from the meaning between the lines by separating extra information (X) from direct answers (A).

Dooyeweerd's Aspects uncover depth by revealing meaningful issues for each user and looking to aspectual profiles. Discussing this can develop an understanding behind the reasons for each answer and each interesting issue. Dooyeweerd's Aspects also help clarification during analysis. Dooyeweerd's Aspects help to understand the current activities of users regarding EMR i.e. if there is resistance or preference toward using paper or EMR.

7.5 Concluding discussion

This chapter discusses three reflections.

The reflection on the aspectual analysis is the main answer for this research question. Dooyeweerd's aspects have been used as a tool to reveal, uncover and classify aspectual meaningful issues for EMR users. The reflection on comparison between users and eight papers shows the differences in what is meaningful to users and in the literature, by qualitative and quantitative comparisons to reveal, uncover and classify aspectual meaningful and DTE issues in each case.

The reflection on impact of research experience discusses the extent of research bias. Dooyeweerd's aspects helps to make the balance between the researcher experience and the views of those researched and reduces researcher bias to emphasise the views of those researched. Finally, Dooyeweerd's Aspect shows the promise and ability to understand the DTE meaningful issues for EMR users with different cohorts.

CHAPTER Eight: Conclusions

8.1 Introduction

This chapter discusses the fulfilment of objectives, aims and research question of research, implications of the findings, whilst also offering a discussion of the possible contributions in practice, methodology and theory. This research is set in the context of the wider world. Each section in chapter 8 discusses the following:

Section 8.2 discusses the objectives of this research and the answer to the main research question by referring to each chapter, in addition to noting the outcomes for each chapters of this thesis.

Section 8.3 discusses the implications of five of the key findings of the present research.

Section 8.4 discusses the limitations of this research.

Section 8.5 discusses the three possible contributions for theory, methodology and practice.

Section 8.6 provides suggestions for future research.

8.2 Discussion of Objectives and Research Question

This section discusses the extent to which the research achieved the research objectives, in addition to examining the degree to which the underlying research question has been answered the research question. The objectives are the following:

- “To identify the requirement for studying meaningful issues in EMR uses” The requirement for this was identified as the three research needs to reveal, uncover and classify Down To Earth (DTE) issues. This in turn can be found at the end of literature review in chapter 2
- “To establish a conceptual framework for the research. (Dooyeweerd’s aspects)”. Chapter.3 discussed to what extent IS Theories (ANT, TAM, and ISSM) are able to meet the three research needs. Dooyeweerd's Aspects were found to be a promising conceptual framework and therefore adopted as a result.
- “To disclose issues which are meaningful for EMR uses by using the conceptual framework.” This objective was achieved by interviewing the EMR users in four hospitals. This relied on the use of Dooyeweerd Aspects as an analysis tool in order to uncover and bring to light the meaningful issues for them.

- “To study the disclosed meaningful issues in several cohorts in EMR uses.” This is fulfilled in Chapter 6 by Quantitative and Qualitative comparisons between hospitals, paper vs. electronic medical records, nationalities, nurses and others.
- “To reflect on how Dooyeweerd’s aspects can provide a good understanding in the use of medical records.” This objective was achieved in (Chapter.7) by reflecting on the aspectual analysis, on comparison of meaningful issues of users and literature, and on the impact of researcher’s experience. The main research question was “How can Dooyeweerd’s aspects be used to understand and study the meaningful issues in EMR uses?” This has been answered by using Dooyeweerd’s Aspects as tool to reveal, uncover and classify DTE issues that are meaningful for users of medical records, which can be done by interviewing users, analysing their utterances to identify aspectual issues, giving priority to extra information rather than direct answers, then performing quantitative and qualitative analysis on the aspectual issues.

The following summarizes the outcome for each chapter in this research.

Outcome of chapter 2

- Identification of DTE in EMR uses mentioned in the literature.
- Introduction of the three research needs (to find a way to reveal, uncover and classify issues).
- The importance of finding a conceptual framework to understand DTE EMR uses.

Outcome of chapter 3

- The idea of multi aspectual functioning as conceptual framework.
- Fulfilment of the three research needs by using Dooyeweerd’s Aspects.

Outcome of chapter 4

- Interpretive approach and open interviews are appropriate.

Outcome of Chapter 5

- Data for aspectual analysis from excerpts.
- Shows overall of qualitative and quantitative data.

Outcome of chapter 6

- Compares aspectual issues in 4 kinds of cohort by quantitative and qualitative analysis:
- Hospitals
- Paper and EMR.

- Nurse and others users.
- Nationalities (Saudi/ foreigners).

Outcome of chapter 7

- Reflection on aspectual analysis and generating findings.
- Reflection on impact of researchers' experience during interviews and analysis.
- Reflection on users and Literature.

8.3 Implications of Findings

This research brought to light five key findings, these include:

Finding.1: The ability of Dooyeweerd's aspects to fulfil the research needs (Reveal, Uncover hidden DTE issues and Classify).

This study shows that Dooyeweerd's aspects are able to be used as useful analytical tool for:

- Revealing Down To Earth about EMR uses.
- Uncovering hidden issues if there are any.
- Classifying the diversity of Down To Earth issues.

As mentioned, a core feature of this study included the use of Dooyeweerd's aspects during the actual analysis. Each aspect is a sphere of meaning that can reveal the precise way(s) in which each issue is meaningful. It was therefore felt that Dooyeweerd's aspects were better suited to the study when compared to the likes of ANT, TAM and ISSM for discussion of Down To Earth issues.

Finding .2: Separating extra information (labelled "X") from direct answers (labelled 'A') helps to focus on what is meaningful to users, and helps to overcome or reduce researcher bias. Aspectual analysis reveals, uncovers hidden and classifies the extra information given by interviewees, to understand the meaningful issues DTE issues for each user to be taken into consideration during transition from paper records to EMR.

Finding 3: DTE issues in the literature are different from those that are meaningful to users. Through the application of Dooyeweerd's aspects, it emerges that the literature itself misses many 'down-to-earth' issues that are of interest to active users of health records and relate to healthcare practice as such. Most of the literature mentions many issues that are of interest to managers, ICT suppliers and academics, but these cannot be properly compared with the

down-to-earth issues encountered in daily use. Even studies of those directly involved are often focused on higher-level issues, and thus of interest to either academics or managers rather than to those 'on the ground'. For example, studies of the advantages of electronic or paper records as such tend to dwell on higher-level issues like cost, rather than down-to-earth issues like the challenge of ensuring the right record for the right patient. This difference in type of issues of interest between literature and users implies that the literature is a poor guide to the selection, design and operation of EMR.

Only a limited number of eight papers in the appendix contained some mention of down-to-earth issues that relate to healthcare practice as such. The papers selected were those that report or discuss actual experience of using health records and are likely to discuss or mention down-to-earth issues. Even in these, the down-to-earth issues were often mixed with high-level, abstract issues, and are sometimes revealed only indirectly. This research has reported a comparison, of which kinds of issues are meaningful in practice, between this cohort of papers and a cohort of users of medical records.

Some issues were important to both users and literature (especially formative and juridical issues), some kinds were more important to one cohort than the other (especially social, lingual and economic issues), while yet other kinds of issue seemed less important to both cohorts (e.g. biotic, psychical, pistic, ethical and aesthetic issues).

Finding 4: At the Down To Earth level there seems to be little difference between paper and electronic MR issues than initially expected. In both quantitative and qualitative analysis, not much difference was found. Although hospital 1 and 3 applied EMR and hospital 2 and 4 still used paper records but both kinds of these hospitals have same DTE issues that are meaningful.

Finding 5: Quantitative and Qualitative analysis, as carried out in Chapters 6 and 7, can work together in interpretive research to provide insights. Quantitative analysis looks at patterns in aspectual profiles rather than precise numbers. Counting the number of issues meaningful in each aspect revealed different profiles of aspectual issues between the cohorts. Qualitative analysis by coding within aspect helps uncovering issues and making detailed comparisons.

Qualitative comparisons of issues in each aspect revealed that, for many aspects, the way they were meaningful between the various cohorts was different, even in aspects that were equally important. For example, in the economic aspect, financial costs are important to the literature while time is important to users.

8.4 Limitations

The study did not intend to generate a comprehensive list of issues to consider when choosing, designing or operating EMR. Owing to relatively small sample sizes of both users and papers studied, the findings of this study should be seen as indicative rather than exhaustive. However, as an indicative study, it has demonstrated clearly that there is a difference between those down-to-earth issues mentioned in the literature from those faced by the users, and that this needs to be considered. It can be argued that the lack of a comprehensive list is an advantage, in that had one been generated, there would be a temptation to rely on it instead of undertaking a down-to-earth study in each situation. The precise down-to-earth issues in one context will differ from those in another, even if the types are the same. So, the down-to-earth issues that are important in each context should be sought each time, and Dooyeweerd's aspects, used in the way shown here, can assist in revealing and separating out such issues. Secondly, the researcher's understanding of aspects might be influenced by their experience, this has been discussed in Chapter 7.

Third, there are cultural differences between literature and interviewees. The interviewees were all employed in hospitals across Saudi Arabia, whereas the literature has emerged mainly from Western culture and contexts, with a mix of hospitals and primary care. It is also worth noting that some of the differences between the two sets of issues might have arisen from difference in culture rather than difference in level (managerial or theoretical, versus down-to-earth) as otherwise suggested. However, had the differences arisen from culture, then one would expect the down-to-earth issues that are meaningful in Saudi Arabia to be relatively meaningless to those in Western culture. In most aspects, what the Saudi users reported as meaningful down-to-earth issues are by no means meaningless in Western health care (for example, location in the lab, late data entry, or time wasted). It is much more likely that down-to-earth issues are of the same general kinds across all cultures, even if they differ in detail. This requires further study, using the method developed here.

There are likely to be reasons for the differences other than culture. One possibility is that the literature is aggregating issues of many aspects and showing them as one, especially those meaningful in the formative aspect. Dooyeweerd noted a tendency to reductionism among theoretical thinkers, especially scientists, in that each science focuses on one aspect and often tries to account for other aspects in terms of it. Those involved in technology would tend to focus on the formative aspect, and reduce lingual and analytical issues to it.

A more important possibility, however, is that one cohort is more active in medical provision than the others. Miller & Sim (2004) differentiate "underlying" issues from "key surface" issues. Many of the down-to-earth issues are those that would be encountered only in active provision of health care, and might be taken for granted or overlooked by managers, ICT suppliers and academics.

Cultural differences are primarily of the social and pistic aspects, though their effect can be found in others. For example, one user mentioned that they are particularly busy during Ramadan and Hajj because the Saudi government offers free health care to all pilgrims. Being able to separate out ways in which issues are meaningful, by use of Dooyeweerd's aspects, can help bring clarity to considering effects of culture, and help identify which issues are cultural and which cross cultural boundaries.

8.5 Possible Contributions

This research has used aspectual interpretation to understand the meaningful issues in EMR uses. The method of quantitative and qualitative comparisons has been mentioned in chapter.5 and 6, the purpose of these comparisons being to gain insight the meaningful issues by applying Dooyeweerd's Aspects to reveal, uncover and classify DTE issues in EMR use. This might help other research in health care sector to apply Dooyeweerd's aspect as a tool to understand the current situation of EMR uses or to improve or evaluate the current EMR, also to understand the different perspective of literature and users.

8.5.1 Contribution to Theory

There is no extant theory of Medical Records; some theories from the field of information systems have been used in the healthcare sector to apply their theories such as ANT, but there is no theory of medical records use as such. Merriam Webster defines theory as

- Belief, policy or procedure proposed or followed as the basis of action.
- Body of principles offered to explain phenomena.

A theory of medical record use therefore, would explain what they are, and how they work, and procedures to follow. Even though there is discussion of policy and procedure, this is often at a high level and focusing on certain issues like confidentiality. There is little discussion of what medical records are or how they work

Most discussion focuses on health care activities, not on medical records use as such, and on physicians and nurses nor on medical record technicians.

This research might help to suggest what such a theory might be like for the point of view of the medical record and all its users.

To Dooyeweerd, use of medical records can be understood as multi-aspectual functioning, the idea of which includes the norm and good of each aspect. Medical records as such would be multi aspectual things:

- It is a lingual thing, Records and means of communication.
- It is a biotic thing, Health.
- It is an economic thing, source of information for healthcare providers.
- It is a formative thing, what to achieve with the patient.
- It is a social thing, coordination.
- It is a pistic thing, belief of physician about patient.
- It is a juridical thing, ensuring proper health care.

This explanation of medical records can enrich policy and procedure. Furthermore, this research could help in building the detail of an aspectual theory of medical record and can explain the differences between hospitals and type of medical record users. Constructing a full theory of medical records use is recommended as a basis for any future research.

8.5.2 Contribution to Methodology

This research can contribute to methodology in the following way:

- Dooyeweerd's aspects is useful for analysis of Down To Earth issues obtained in open interviews. Specifically Dooyeweerd's aspects can help reveal Down To Earth issues in the text uncover hidden issues in the text and classify Down To Earth issues.
- Dooyeweerd's aspects are useful in analysis. They are flexible to uses in the literature and other comparisons. This research shows usefulness in hospitals but it could be extended to other organisations.
- Policy makers currently take into consideration the international standards and managerial concern rather than users perspectives. They could take meaningful issues for users into account but they did not do so. Dooyeweerd's aspects can help the policy makers to take the meaningful issues into account.
- Patient life is very important. So the healthcare giver should be in full awareness but sometimes they forget things, which places patient lives at risk.
- Using Dooyeweerd's aspects helps the users to uncover the things they are forgetting and to prevent forgetting.

Overall, Dooyeweerd Aspects shows promise as a tool for analysis in healthcare sector in order to find out DTE issues.

8.5.3 Contribution to Practice

This research can help EMR design, and can help managers, decision makers and others who are interested in evaluation, training and the transition from paper to electronic patient record, in the following ways:

Dooyeweerd's Aspects help in the design of the new EMR system by revealing, uncovering and classifying the meaningful issues so that the designers can take the DTE issues into account to design the system, Basden (2008) noted that three factors are important in the design of such a system, these include the user interface, the meaningful content, and the benefits in use, each of which involves every aspect. Most of the current researches focus more on user interface. This present research however contributes by offering the meaningful issues in content and benefit in use.

1- Revealing Issues for design.

This research can help designers, managers and academics to reveal the issues that are meaningful to EMR users. In addition, it can help the EMR designer to assess or evaluate

current medical records system (whether paper or electronic) and design or redesign systems with knowledge of the down-to-earth issues that affect the success of the system in use.

An example of meaningful issues for physician as users is that each physician has a different perspective in using patient records, which is usually linked to his/her specialties, e.g. surgeons might prefer to describe the patient's condition in a few lines while a gynecologist or pediatrician often prefers to write a storyline. Such issues need to be revealed as meaningful issues for physicians, which will lead the designer to understand which screens need to be put up for each type of user to meet their different needs. Such design differences help users to access into EMR and can help us understand the reasons for resistance to use of EMR as well as highlight the strongest and weakest figures in EMR system.

2- Uncover hidden issues for design.

This research might help designers to uncover hidden issues. An example is deficiency in filing patient records, where some users such as nurses might write in the patient record because it is required by hospital policy but is only following rules, so that they do not write it carefully. By uncovering hidden issues the designer can take the users DTE issues more into consideration to improve the EMR system, and make it friendly to the EMR users and more fully meets their needs.

3- Classifying issues for design.

This research can help designers to classify the meaningful issues for each group of users. Usually, physicians have different preferences while nurses often use common or general screen for each specialty e.g. a nurse uses the same screen if she is in surgery or gynecology wards, physicians therefore tend to have wider preferences in comparison. Although nurses use EMR frequently and more than the other users, they have their meaningful issues. Therefore, classify DTE issues for users show you that aspects are more or less they might interest e.g. some nurses usually doing their work (properly) refers to juridical aspect and so on and for, so classifying DTE for nurses and physicians, respectively, can help to design new EMR system or develop a new EMR system.

Dooyeweerd's aspects help in evaluation of existing EMR system by understanding DTE issues. This will help managers and ICT suppliers to evaluate, develop current system either

paper or electronic in a way that is sensitive to the DTE issues that affect quality of EMR use. Dooyeweerd's Aspects is not exclusive in health care sector, in fact this theory could be used in any sectors e.g. in education.

- Revealing DTE issues helps in evaluation of the current system by applying or using Dooyeweerd's aspects as tool to estimate the EMR users' activities. For example, different kind of screen led to different needs for healthcare users. Usually nurses can use similar screen in any nurse station and gynecologist needs screen for child and mother while the dentist needs a brief screen.
- Uncovering hidden issues from IT developers, designers and managers perspective
- Classifying DTE issues using Dooyeweerd's aspects helps in evaluating different meaningful issues for health care users and understands the depth of the issues.
- Dooyeweerd Aspects helps in planning training of individuals. . This thesis helps designing of the training program for procedure and technical use of patient medical records. Lorenzi et al, (2009) raised the issue of training; in particular, the authors argue that a 'one size fits all' approach to EHR training during implementation remains far from optimal. . This suggests that the issue of training be given greater consideration, taking into account the needs of each health care user. Dooyeweerd's aspects are able to facilitate this as they allow for can help in designing training that is sensitive to the needs of different EMR uses to be designed. As this research shows how to reveal the meaningful issues, uncover hidden issues and classify these issues, it can help to design specific training for each group of healthcare users. Reveal DTE issues. For example some EMR users resist EMR either because computer literacy or other reasons, so by understanding the DTE reasons for resistance we can design individual training program for each group of EMR users to overcome this resistance also understand the gap in EMR system and fix it.
- Uncover the hidden issues. For example, if users do not fill up the EMR properly, this can cause deficiencies in EMR. Some users might know how to use the EMR while others would not say they do not know how to use it; this is especially true of physicians.

- Classify the DTE issues. This helps to focus the design of training for each specialty.

Dooyeweerd Aspects helps in transition to EMR in design and training, as discussed above, and also in redesigning workflow for EMR. Dooyeweerd's aspects can also assist in redesigning the workflow for the transition to EMR. To ensure the redesign meets the users' need, this research can help to take into account the meaningful issues of healthcare givers. The DTE issues meaningful in using paper records can be revealed, uncovered and classified so as to fully consider design of the new workflow.

Dooyeweerd's aspects can also help the policy maker either to update or create new policy and guidelines for EMR. This research can, for example, help to find out the DTE issues that make some EMR users resist use of EMR.

8.6 Future Research

Further study into this research area may help to overcome some of the limitations discussed above.

- The analysis of the literature in chapter 7 served as a pilot study; it would be effective to investigate more articles to reveal DTE and meaningful issues, in order to more fully compare what is meaningful in the literature with what is meaningful to users.
- There were equal numbers for each hospital. It would be good to use the method developed in this research to study more hospitals equally to find out more meaningful issues for each kind of paper and EMR.
- This research has analysed 38 excerpts to yield 317 aspectual issues, and applied aspectual analysis to understand the meaningful issues for users, but it could analyse more excerpts for further research especially to increase physicians' number. Also, more medical record technicians could be interviewed.
- Each contribution indicates future work for further research, e.g. contribution of practice such as training, developing design or re-design. The designers could be trained how to use method developed in this research to make their designs more sensitive to users.
- Find other cohorts to compare their aspectual issues, such as between male and female healthcare workers. This might find different results to understand similarities or difference between genders and find the DTE and meaningful issues among them.
- A practical method could be created for asking users about their training needs, which takes account of their DTE issues. This would aid designers of EMR training to develop

the training program and to take into consideration of meaningful issues to design specific training program for each group of users.

- As a contribution to theory there is a need to construct theory for EMR uses in terms of multi aspectual functioning, using the interesting idea of Dooyeweerd's aspects. The success of EMR uses refers to the norms of all 15 aspects to help recourse and relationship.

REFERENCES

- Aarts, J. And Gormanb, P. 2006. IT in Health Care: Sociotechnical Approaches “To Err is System”. *International Journal of Medical Informatics* 7, pp. 1-3.
- Adebowale I. Ojo, PhD. 2016. Validation of the DeLone and McLean Information System success model. School of Management, IT & Governance, University of KwaZulu-Natal, Durban, South Africa
- Ahmad, 2011, Down-to-earth issues in (mandatory) IS use: part 1 introducing the concept unpublished.
- Ahmad, H., and Basden, A. 2013. Down-to-Earth Issues in Information System Use. *Proceedings of the Pacific Area Conference on Information Systems (PACIS)*. Paper 191.
- Alanazy S. 2006 Factors associated with implementation of electronic medical records in Saudi Arabia: D., University Of Medicine And Dentistry Of New Jersey, New Jersey, and USA.
- Aldajani M. Electronic Patient Record Security Policy in Saudi Arabia National Health Services: De Montfort University 2012.
- Alkrajji A, Jackson T, Murray I. 2012. Barriers to the widespread adoption of health data standards: an exploratory qualitative study in tertiary healthcare organizations in Saudi Arabia. *J Med Syst*. 2013 Apr; 37(2): 9895.
- Alsahafi Y. 2012 Studies of EHR Implementation and Operation in Different Countries with Particular Reference to Saudi Arabia: Massey University
- Altiwajiri. K, 2010, '30 connected e-hospitals in 24 months Saudi cases study', HIMMS Middle East conference, Middle East.
- American Academy of Paediatrics 2002. Privacy protection of health information: Patient rights and paediatrician responsibilities. *Paediatrics* 1999; 104:973–7; Canadian Coalition for the Rights of Children. Rights of the Child: Health Care and the UN Convention on the Rights of the Child. Available at: www.rightsofchildren.ca. OpenUrl
- The American Heritage® Medical Dictionary. 2008. *American Heritage Dictionary*. NY: Houghton Mifflin Harcourt.pp326
- Arar N.H., Wen L., McGrath J., Steinbach R., Pugh J.A. 2005. Communicating about medications during primary care outpatient visits: the role of electronic medical records. *Inform Prim Care* 13: 13-22.

- Ash, J. 1997. Organizational Factors that Influence Information Technology Diffusion in Academic Health Sciences Centres. *Journal of the American Medical Informatics Association* 4(2), pp. 102-111.
- Baggs, J. G., Schmitt, M. H., Mushlin, A., Mitchell, P., Eldredge, D. H., Oakes, D., & Hutson, A. 1999. Association between nurse-physician collaboration and patient outcomes in three intensive care units. *Critical Care Medicine*, 27, 1991-1998.
- Barrows, R., C., and Clayton, P., D. 1996. Privacy, Confidentiality: and Electronic Medical Records. *Journal of American Medical Informatics Association*, 3(2): 139–148.
- Basden A. 2008 *Philosophical Frameworks for Understanding Information Systems*. IGI Global Hershey, PA, USA. .
- Bates D.W., Teich .JM. Lee J., Seger D., Kuperman G.J., Ma'luf N., Boyle D., and Leape L. (1999). The impact of computerized physician order entry on medication error prevention. *JAMIA*, 6(4), pp.313–321.
- Bates, D., Ebell, M., Gotlieb, E. , Zapp, J., and Mullins, H. (2003). A proposal for electronic medical records in US primary care, *Journal of the American Medical Informatics Association*. 10 (1), pp.1–10.
- Beiter P.A., Henderson C.J., Hatton E.K., Talen M. 2008 Do electronic medical record (EMR) demonstrations change attitudes, knowledge, skills or needs? *Informatics in Primary Care*, 16(3), 221-27
- Berg 1997, 'of forms, containers, and the EMR: tools for sociology of the formal science, technology & human values.' SAGE, vol 22, p. p. 403.
- Berg, M & Bowker, G 1996, 'The multiple bodies of the medical record', *The sociological quarterly*, pp. pp. 513-537.
- Berg, M. 1997. Problems and Promises of the Protocol. *Social Science and Medicine* 44 (8), pp. 1081-1088.1081-
- Ben-Assuli, O. 2015. Electronic health records, adoption, quality of care, legal and privacy issues and their implementation in emergency departments. *Health Policy*, 119(3), 287-297. <http://dx.doi.org/10.1016/j.healthpol.2014.11.014>
- Bliemel, M & Hassanein, K 2004, 'E-health: applying business process reengineering principles to healthcare in Canada', *International Journal of Electronic Business*, vol 2, no. 6, pp. pp. 625-643.
- Bloomfield, B.P. 1991. The Role of Information Systems in the UK National Health Service: Action at a Distance and the Fetish of Calculation. *Social Studies of Science*, 21 (4), pp. 701-734.

Bloomfield, B.P.1995. Power, Machines and Social Relations: Delegating to Information Technology in the National Health Service. *Organization*, 2, pp. 489-518.

Bossen et al, 2013.Evaluation of comprehensive EHR based on the DeLone and McLean model for IS success: Approach, results, and success factors; **Elsevier**

Bra, J. Monteiro, E. Sahay, S. 2004. Networks of action: Health information systems across developing countries, *MIS Quarterly*; 28(3): 337- 362.

Brandon PS, Lombardi P 2005 Evaluating Sustainable Development in the Built Environment. Oxford, UK: Blackwell Science.

Brisset P.R., Gilman C.S., Morgan M.T., Shabot M.M. and Hallman E. 2004. Who are your CPOE users and how do you train them? Lessons learned at Cedars-Sinai Health System. *Medinfo*; 1536 (CD).

Cassell, C, and Symon, G. and Penny, D. 2004.Essential guide to qualitative method in organizational research SAGE Publications

Cho et al, 2015.A performance evaluation of public hospital information systems was carried out by ISSM

Crane, J. & Crane F.G. 2006. Preventing Medication Errors in Hospitals through a Systems Approach and technological innovation: a prescription for 2010. *Hospital Topics*, Fall 2006, 84, 4.

Cresswell, K., Worth, A. and Sheikh, A. 2011. Implementing and adopting electronic health record systems. *Clinical Governance*, 16, pp. 320-336.

Daigrepoint J., and McGrath D. 2011. Complete Guide and Toolkit to Successful EMR Adoption. Healthcare Information and Management Systems Society (HIMSS): Chicago.

Damberg, C.L., Shortell S.M., Raube, K., Gillies, R.R., Rittenhouse, D., McCurdy, R., Casalino, L.P., Adams, J. 2010 Relationship between Quality Improvement Processes and Clinical Performance. *American Journal of Managed Care*, 16(8).

Danielle 2010, 'Doctor vs. the computer', *The New York Times*, 30 Dec 2010.

Davies, FD 1989, the technology acceptance model for empirically testing new end-user IS: theory and results, unpublished paper. edn, Massachusetts Institute of Technology, Cambridge, USA.

Davies, L, Domm, JA, Kinokoff, M & Miller, RA 1998, 'Attitudes of first-year medical students toward the confidentiality of computerized patient records.' *Journal of JAMIA*, vol 1999, no. 6:1, pp. 53-60.

Denzin, N.K. and Lincoln, Y.S. 2011. *The SAGE Handbook of Qualitative Research*. SAGE.

- De Raadt, VD. 2001. Multi-Model System Method: The Impact of Normative Factors on Community Viability. *Institute for management and social System*, System Research and Behavioural Science. 18, pp. 171-180
- Deutsch, E., Dufschmid, G. & Dorda, W. 2010. Critical areas of national electronic medical records programs- Is our focus correct? *International Journal of Medical Informatics*, 79, pp 211-222.
- Devitt, N & Murphy, J. 2004, a survey of the information management and technology training needs of doctors in an acute NHS trust in the United Kingdom.
- Dick, R. and Steen 1991. *The computer-based patient records; an essential technology of health care*. Revised edition. Washington DC: institute of medicine, National Academy
- Doolin B. 2004. Power and resistance in the implementation of a medical information system. *Information Systems Journal*, 14, 343-62.
- Doolin, B. 2004. Power and resistance in the implementation of a medical management information system. *Information system journal*, 14, pp. 343–362
- Dooyeweerd's H. 1955. *A New Critique of Theoretical Thought*, Vol. I-IV, Paideia Press (1975 edition), Jordan Station, Ontario.
- Doward, J. 2008. Chaos as £13bn NHS computer system falters. London: The Guardian, 10th August 2008. Retrieved 2008-08-11.
- Eng, T.R., Maxfield, A., Patrick, K, Deering, M.J., Ratzan, S.C., and Gustafson, D.H., 1998. Access to Health Information Support: A Public Highway or a Private Road? *JAMA*, 280 (15).
- Eriksson DM.2001. Multi-Modal Investigation of a Business Process and Information System Redesign: A Post-Implementation Case Study, *System Research and Behavioral Science* 18, pp. 181-196.
- Fetter, MS 2009, 'Improving information technology competencies: implications for psychiatric health nursing', *Issues in mental health nursing information healthcare journal*, vol 3, p. 13.
- Flynn, EA, Barker, KN, Pepper, GA, Bates, DW, Mikeal, RL. 2002. Comparison of methods for detecting medication errors in 36 hospitals and skilled-nursing facilities. *American Journal of Health-System Pharmacy*, 59(5), 436-446
- Fonkych K, Taylor R. *The state and pattern of health information technology adoption* Santa Monica, Calif: Rand; 2005.

- Fraser HSF, Biodich P, Moodley D, Choi S, Mamlin BW and Szolovits P. 2005. Implementing electronic medical record systems in developing countries. *Informatics in Primary Care*, 14:83–95.
- Gartrell, K., Storr, C., Trinkoff, A., Wilson, M., & Gurses, A. 2015. Electronic personal
- George, J., and Bernstein P., S. 2009. Using electronic medical records to reduce errors and risks in a prenatal network. *Current Opinion in Obstetrics and Gynecology*, 21(6). Pp.527-531.
- Glaser BG, Strauss AL 1967 the Discovery of Grounded Theory: Strategies for Qualitative Research. New York: Aldine de Gruyter.
- Green, S., & Thomas, J. 2008. Interdisciplinary collaboration and the electronic medical record. *Paediatric Nursing*, 34(3), 225-240.
- Greenhalgh, T and Stones, R. 2010. Theorising big IT programmes in healthcare: Strong structuration theory meets actor network theory. *Social Science & Medicine*, 70, pp. 1285-1294
- Hanseth, O., Aanestad, M and Berg, M. 2004. Actor-network theory and information systems. What's so special? *Emerald Group Publishing Limited* 17(2), pp. 116-123.
- Health record use among registered nurses. *Nursing Outlook*, 63(3), 278-287.
<http://dx.doi.org/10.1016/j.outlook.2014.11.013>
- Hazlehurst B, Frost HR, Sittig DF, and Stevens VJ. 2005. MediClass: A system for detecting and classifying encounter-based clinical events in any electronic medical record. *Journal of the American Medical Informatics Association*, 12(5), pp.517-29.
- Holden and Krash 2010 *The Technology Acceptance Model: Its past and its future in health care*; Elsevier
- Hsiao, C. and Yang, C, 2011. The intellectual development of the technology acceptance model: A co-citation analysis *International Journal of Information Management* 31 (2011) 128–136, an Institute of Business and Management, National Chiao Tung University. Elsevier
- Huffman, EK 1981, *Medical record management*, 6th edn, Physicians' Record Company, Illinois.
- Ilie, V, Courtney, JF & Slyke, Paper versus Electronic: Challenges Associated with Physicians' Usage of Electronic Medical Records Proceedings of the 40th Hawaii International Conference on System Sciences - 2007
- Janusz S, and Grzegorz K. 2003. Electronic patient record and archive of records in Cardio.net System for Telecardiology. *PolJPathol*. 54(3), pp.223-226.

Junger et. al. 2001. Evaluation of the suitability of a patient data management system for ICUs on a general ward. *International Journal of Medical Informatics* 64, pp. 57-66.

Kash, B., Gamm, L., Bolin, J., Peck, B. 2005. Opportunities for administrators in promoting disease management. *Journal of Healthcare Management*, 50(5), 297-310.

Katzenstein, J., and Chrispin, B. 2005. Effect of culture on the design of a Telemedicine System in Tanzania(abstract), The fifth International Conference on Diversity in Organizations, Communities and Nations, 30 June - 3July, 2005, Beijing, China.

Khalifa and Alswailem 2015. Hospital Information Systems (HIS) Acceptance and Satisfaction: A Case Study of a Tertiary Care Hospital The 5th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH 2015)

Klein, H.K. and Myers M.D. 1999. A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems. *Management Information Systems Research Center, University of Minnesota* 23(1), pp. 67-93.

Kokkonen EW, Davis SA, Lin HC, Dabade TS, Feldman SR, and Fleischer AB, Jr. 2013. Use of electronic medical records differs by specialty and office settings, *Journal of the American Medical Informatics Association*; 20:e33-8. Doi: 10.1136/amiajnl-2012-001609.

Koppel R., Metlay JP. Cohen A., Abaluck B., Localio AR., Kimmel SE., and Strom BL., 2005. Role of Computerized Physician Order Entry Systems in Facilitating Medication Errors, *Journal of the American Medical Association*, Vol. 293, 2005, pp. 1197–1203.

Kreps, G.L., 2002. Enhancing Access to Relevant Health Information. *Shaping the Network Society: Patterns for Participation, Action, and Change*. CPSR, Palo Alto, CA.

Kyhlback H, Sutter B. 2007. What does it take to replace an old functioning information system with a new one? A case study. *International Journal of Medical Informatics*, 76S: S149-S158.

Latour. (1987)*Science in Action* 8th edn. Cambridge, Massachusetts: Harvard University press

Law, J and Singleton, V. 2005. Object Lessons. *Sage Journals*, 12 (3), pp. 331- 355.

Lee, A, S., 1994 "Electronic Mail as a Medium for Rich Communication: An Empirical Investigation Using Hermeneutic Interpretation," *MIS Quarterly*([^]8:2),,pp,143-15

Lluch, M. 2011. Healthcare professionals' organisational barriers to health information technologies -- a literature review. *International Journal of Medical Informatics*, 80(12), 849-62.

- Lorenzi, N.M., Riley, R.T., Blyth, A.C., Southon, G. and Dixon, B.J. 1997. Focus on people and organization issue. *Journal of the American Medical Informatics Association* 4 (2), pp. 79-93.
- Lowe, A. 2015. Casemix accounting systems and medical coding. *Journal of Organizational Change Management*, 14 (1), pp. 79- 100.
- Maslow, A. 1943. A theory of human motivation. *Psychological Review*, 50, 370-396.
- Mason, R.O., 1986 Four Ethical Issues of the Information Age, *MISQ*, March 1986.
- Mbarika, V. 2001. Africa's Least Developed Countries' Teledensity Problems and Strategies. Yaoundé, Cameroon, ME & AGWECAMS Publishers.
- McAlearney AS, Schweikhart SB, and Medow MA 2005. Organizational and physician perspectives about facilitating handheld computer use in clinical practice: Results of a cross-site qualitative study. *Journal of the American Medical Informatics Association*; 12: 568-75
- McDonald 1997, 'The barriers to electronic medical record systems and how to overcome them', *JAMIA journal*, vol 4, no. 3, pp. 213-221.
- Middleton, J. 2008. Nurses have the power to change lives - and deaths; how do we reduce drug errors? *Nursing Times*, 21 January 2008.
- Miller, R.H., Sim, I. 2004. Physicians' use of electronic medical records: barriers and solution. *Health Affairs (Millwood)* 23(2), 116-26.
- Miles, M. B., & Huberman, A. M. 1994. *Qualitative Data Analysis: An Expanded Source Book* (2nd ed.). Newbury Park CA: Sage.
- Mosby's Medical Dictionary. 2009. *Mosby's Dictionary of Medicine, Nursing & Health Professions*. Elsevier
- Mugo D., M., and Nzuki, D. 2014. Determinants of Electronic Health in Developing Countries. *International Journal of Arts and Commerce*, 3(3). Pp.49-60
- Mukherjee, A & McGinnes, J 2007, 'E-healthcare: an analysis of key themes in research', *International journal of pharmaceutical and healthcare marketing*, vol 1, no. 4, pp. 349-363.
- Murphy, J. 2011. The Nursing Informatics Workforce: Who Are They and What Do They Do? *Nursing Economic* 29(3), pp. 150-153.
- National Research Council (1997). *The Computer-Based Patient Record: An Essential Technology for Health Care*, Revised Edition. Washington, DC: The National Academies Press.
- Nelson, J. & Venhaus, R. 2005. Improving retention through nurse/physician communication. *Nurse Leader*, 3(1), and 54-56.

- O'hEocha et al., 2012. The use of Focus groups in complex pressurised IS studies and evaluation using Klein & Myers principles for interpretive research. *IS Journal*, 20, pp.245
- Olson L.A., Peters S.G., Stewart J.B. 1998. Security and confidentiality in an electronic medical record. *Healthcare Inform Manage*, 12, pp.27–37.
- Orlikowski, W.J. and Baroudi, J.J. 1991. Studying Information Technology in Organizations: Research Approaches and Assumptions. *The Institute of Management Sciences* 2(1), pp. 1-29.
- Orser B. 2000. Reducing medication errors. *Canadian Medical Association Journal*, 162(8), April 18 2000, 1150-1.
- Pallav 2006, 'Customizing clinical narrative for EMR interface using cognitive method ', *International journal of medical informatics*, vol 75, pp. 346-368.
- Pare, G., Raymond, L., de Guinea, A., Poba-Nzaou, P., Trudel, M., Marsan, J., & Micheneau, T. 2014. Barriers to organizational adoption of EMR systems in family physician practices: A mixed-methods study in Canada. *International Journal Of Medical Informatics*, 83(8), 548-558. <http://dx.doi.org/10.1016/j.ijmedinf.2014.06.003>
- Pai, F. and Huang, K. 2011. Applying the Technology Acceptance Model to the introduction of healthcare information systems; *Technological Forecasting & Social Change* 78 (2011) 650–660 Elsevier
- Polanyi M, 1967, *The Tacit Dimension*, Routledge and Kegan Paul, London U.K.
- Porter, S. 2006. A participant observation study of power relations between nurses and doctors in a general hospital. *Journal of Advanced Nursing*, 16(6), 728-735.
- Protti, D., Bowden, T., Johanssen, I. 2008 Adoption of information technology in primary care physician offices in New Zealand and Denmark, part 3: medical record environment comparisons. *Informatics in Primary Care*, 16(4), 285-290.
- Protti, D., Edworthy, S., & Johansen, I. 2007. Adoption of Information Technology in Primary Care Physician Offices in Alberta and Denmark, Part 1: Historical, Technical and Cultural Forces. *Healthcare Quarterly*, 10(3), pp 95-102.
- Qiao, Y., Asan, O. and Montague, E. 2015. Factors associated with patient trust in electronic health records used in primary care settings. *Health Policy and Technology*, 4(4), pp.357-363.
- Ramiller, C.N. 2006. Constructing safety: System design, system effects and play of heterogeneous interest in a behavioural health care setting. *International journal of medical informatics*, 765, pp.197- 204.

Renner K. 1996. Cost-justifying electronic medical records. *Healthcare Finan Manage*; 50: pp.63–64.

Richard, K. 2014 *focus groups a practical guide for applied research* 5TH edition SAGE Publications

Rose AF, Schnipper JL, Park ER, Poon EG, Li Q and Middleton B. 2005 Using qualitative studies to improve the usability of an EMR. *Journal of Biomedical Informatics*,38(1),pp.51–60.

Saunders, M., Lewis, P., & Thornhill, A. 2003, *Research methods for business students*, 3rd, Pearson Education, England

Shachak, A., Barnsley, J., Montgomery, C., Tu, K., Jadad, A.R., Lemieux-Charles, L. 2012 End-user support for a primary care electronic medical record: a qualitative case study of a vendor's perspective. *Informatics in Primary Care* 20, 185-96.

Shah SG, Fitton R, Hannan A, Fisher B, Young T, Barnett J. 2015. Accessing personal medical records online: a means to what ends? *Int J Med Inform*, 84:111-8.

Shekelle PG, Morton SC, Keeler EB. 2006. Costs and benefits of health information technology. *Evid Rep Technol Assess*; 132:1–71.

Simon, S. R., McCarthy, M. L., Kaushal, R., Jenter, C. A., Volk, L. A., Poon, E. G., et al. 2008) Electronic health records: Which practices have them, and how are clinicians using them? *Journal of Evaluation in Clinical Practice*, 14(1), 43-47. doi:10.1111/j.1365-2753.2007.00787.x

Simons, M. 2011. Government to scrap NPfIT NHS IT programme today. *Computerworld UK*, 22 September 2011.

Sittig, D.F., Krall, M., Kaalaas-Sittig, J. and Ash, J. 2005. Emotional Aspects of Computer-based Provider Order Entry: A Qualitative Study. *Journal of the American Medical Informatics Association* 12(5), pp. 561-567.

Sood, S.P., Nwabueze, S.N., Mbarika, V.W.A., Prakash, N., et al. 2008. Electronic Medical Records: A Review Comparing the Challenges in Developed and Developing Countries. *41st Hawaii International Conference on System Sciences*, pp. 1-10.

Stausberg, J, Koch, D, Ingenerf, J & Betzler, M 2003, 'Comparing paper-based with electronic patient records: lessons learned during a study on diagnosis and procedure codes', *JAMIA journal*, vol 10, no. 5, pp. 470-477.

- Suh, R. 2006. Health Information Technology Current Status and Future Directions. Preventive Medicine. Annual Meeting of the American College of Preventive Medicine. Available online at: <http://www.medscape.org/viewarticle/530408>.
- Swinglehurst., D. 2010. Ethnographic study of ICT-supported collaborative work routines in general practice. BMC Health Services Research pp. 10-348.
- Tilahun, B. and Fritz¹, F. 2015; Comprehensive Evaluation of Electronic Medical Record System Use and User Satisfaction at Five Low-Resource Setting Hospitals in Ethiopia; ¹Institute of Medical Informatics, JMIR Med Inform 2015 | vol. 3 | iss. 2 | e22 | p.1
- Timmons, S. (2003), Nurses resisting information technology. Nursing Inquiry, Wiley Online Library, 10, 257-269. doi: 10.1046/j.1440-1800.2003.00177.x
- Urquhart C, Currell R, Grant MJ, Hardiker NR. 2009. Nursing record systems: effects on nursing practice and healthcare outcomes. Cochrane Database of Systematic Reviews, Issue 1. Art. No.: CD002099. DOI: 10.1002/14651858.CD002099.pub2.
- Ventura, M.L., Battan, A.M., Zorloni¹, C., Abbiati, L., Colombo, M., Farina, S., Tagliabue, P. 2011 The electronic medical record: pros and cons. Journal of Maternal-Fetal and Neonatal Medicine, Informa Healthcare, October 2011, 24(S1), 163-166.
- Vest., J. R. 2012. How are health professionals using health information exchange systems? Measuring usage for evaluation and system improvement. NIH Public Access 36(5), pp. 3195-3204.
- Yousafzai SY, Foxall GR, Pallister JG. 2007. Technology acceptance; a meta-analysis of the TAM: part 1. Journal of Modelling in Management,2(3), 251-280
- Walsh, S 2004, 'The clinical perspective on EMR & how they can affect patient care?' BMJ journal, vol 328, p. 1184.
- Wang, SJ, Prosser, LA, Spurr, CD, Carchidi, PJ, Kittler, AF, Goldszer, RC, Sussman, AJ, Kuperman, GJ, Bates, DW. 2003. A cost-benefit analysis of electronic medical records in primary care. The American Journal of Medicine, 114, April 1, 2003, 397-403.
- Weaver, K. and Olson, J.K. 2006. Understanding paradigms used for nursing research. Journal of Advanced Nursing , vol.53(4), pp. 377-491.
- West, S., Blake, C. 2009. Reflections on the use of electronic medical records data for clinical research. Health Informatics Journal, vol 15, no. 2, pp. 108-121.
- Wetter., T. 2006. To decay is system: The challenges of keeping a health information system alive International journal of medical informatics 76, pp. 252–S260.
- Winthereik, R.V.2015. The Electronic Patient Record as a meaningful Audit Tool. *Science, Technology, & Human values*, 32 (1), pp. 6- 25.

World Health Organization 2006. Electronic Health Records: Manual for Developing Countries. WHO Library Cataloguing. ISBN 92 9061 2177. Available online at: <http://www.wpro.who.int/publications/docs/EMRmanual.pdf>.

Wright, A., McCoy, A., Hickman, T., Hilaire, D., Borbolla, D., & Bowes, W. et al. 2015. Problem list completeness in electronic health records: A multi-site study and assessment of success factors. *International Journal of Medical Informatics*, 84(10), 784-790. <http://dx.doi.org/10.1016/j.ijmedinf.2015.06.011>

APPENDIX.1

This appendix included all the users excepts and their aspectual analysis tables that, also shows the main and extra information, some examples of users table have been mentioned and discussed in chapter.5 and at the end of appendix.1 source table count for aspectual issues.

Users Tables

T.1 (N.3.2)-Question: which is better to work on, the paper file or on the electronic file?

Answer: both are good, but both must be correctly used. Because I cannot tell you which is better, because this requires study. Therefore, in order to know which is better, we must do brain storming. And all concerned parties must meet to take such a decision and to take the appropriate decision about which is better. I, on my own, cannot decide that, but there is some documentation that I can do for them minimizing and they become awareness

Category of aspect	Aspect	Issues	Reasons
Q. Aspect	Analytical Pistic	Which is better E-file. Or paper file? In terms of beliefs to work.	Comparing between two different type of file in terms of work in appropriate
A. Aspect	Analytical	Both are good	How each type will be used correctly
X	Analytical Social	I cannot tell you which is better, because this requires study. Therefore, in order to know which is better, we must do brain storming. And all concerned parties must meet to take such a decision	Study the reasons for which one is better. All users should involve to take decision about transition
	Lingual	But there are some documentations that I can do for them minimizing and they become awareness	Writing policy or update the excising

Table 5-1 Linking category aspects relating to Question T.1 (N.3.2)

T.2 (N.1.2)-Question: which one would you prefer Paper file or electronic?

Answer: Honestly I prefer HIS system (hospital information system). Everything in one place is good. Even the doctors plan etc. progress notes etc.

	Aspect	Issues	Reasons
Q. Aspect	Analytical	Asking preference or choice	To clarify the reasons
A. Aspect	Pistic or faith	Honestly I, prefer	To believe his or her own choice and doing in the required way
X	Economic	Every things in one place	Pointing to all patient information and forms located in HIS (hospital information system)
X	Economic	Even the doctors plan, progress.	Give some details of forms and mention the forms
X	Juridical	Everything in one place is good	

Table 5 2 Linking category of aspects with Question T.2 (N.1.2)

T.3 (N.1.2)-Question: why do you prefer HIS?

Answer: because. It' s easily accessible and can limit the time lost in paper work. We can focus more on patient care, the bed side care of the patient. Rather than filling up forms.

Question: is there any disadvantage of HIS?

Answer: there is no disadvantage

	Aspect	Issues	Reasons
Q. Aspect	Analytical	Asking for reason	Giving more explanations
A. Aspect	Juridical	Its easily accessible	Find the easy way to finish her work or dealing with patient files
	Economic	And can limit the time lost in paper work	Saving time of documentation
X	Formative,		Concerning more about patient care the main

	Juridical (tacit) Ethical	Focusing more on patient care	task as a nurse Give more time for patient doing her work as a nurse in proper duty of nurse to giving care for patient rather than paper work Concern more about patient by giving time.
X	Lingual	Filing up forms	Required documentation
A	Pistic	No disadvantage	

Table 5 3 Linking category of aspects with Question T.3 (N.1.2)

T.4 (C.2.1)-Question: can you tell me your job description and your routine work?

Answer: I am a medical record and used to be a ward clerk. My job description is that I am a medical record and a transcriptionist. I type the discharge summary of all patients, which is written by physicians, and correct the grammar. I also book appointments of patients. I also keep the files confidential between physicians and myself. I also used to deal with lab requests and investigations such as diagnosing the case of patients, keep patients in proper beds and to ensure with the consultant that the patient is under care with him. Receive calls from other departments, book patients and etc.

	Aspect	Issues	Reasons
Q. Aspect	Formative	Job description and your routine work	Asking about job description
A. Aspect	Analytical Lingual	Job description and your routine work...	(Describing her routine work) Aspect of interview. Saying her routine work in details
X	Lingual Lingual	Type, booking request, ensure, receive calls, booking patient appointment. Correct grammar	Doing documentation

X	Juridical	Keep the files confidential between myself and physicians	Doing her job in proper or responsibility to keep patient confidential.
	Social		Communicating between nurse and physicians
X	Juridical	Keep patients in proper beds and to ensure with the consultant that the patient is under care with him	Doing her job in right way

Table 5-4 Linking category of aspects with Question T.4 (C.2.1)

T.5 (N.1.1)-Question: what if the nurse forgets to write things down?

Answer: we have a late entry policy. But we try not to forget the whole thing but can enter it late. No negligence is allowed. So if the nurse is not able to document something immediately, she or he will do it later.

	Aspect	Issues	Reasons
Q. Aspect	Lingual	What if the nurse forgets to write things down	Give details and clarify if there are some Patient information not written
X	Lingual	We have a late entry policy.	Writing late information
	Formative	But we try not to forget the whole thing but can enter it late.	Try to beware not to forget
	Psychic	Forget whole things	Because forgetting is a mental things

	Juridical	No negligence is allowed.	Should do work in right way.
	Lingual	So if the nurse is not able to document something immediately, she or he will do it	Document something
	Economic	later	Immediately
	Formative	Able to. Do it	

Table 5-5 Linking more aspects with issues and reasons with Question T.5 (N.1.1)

T.6 (N.2.1)-Question: do you think nurse sometimes forget to document?

Answer: honestly speaking for me personally, I should say I rarely forget because I try to focus on my job. And I can't speak for other nurses.

C	Aspect	Issues	Reasons
Q.	Analytic	Do you think nurse sometimes forget to document	To clarify her his opinion
A	Faith/pistic	Honestly speaking for me personally	(She believes) Aspect of interview.
X	Economic	Rarely, forget because I try to focus on my job.	Rarely forget
	Juridical		Focusing in her job
	Psychic	Forget	
X	Faith	Cant speak about other nurse	Feeling proud and believes in herself
	Ethical		Not mentions others

Table 5-6 Linking responses with aspects with Question T.6 (N.2.1)

T.7 (N.2.1)-Question: When do you check the file, and where do you keep patient files?

Answer: Well, sometimes I have it on my counter because I try to get these things done

before starting the doctor round and all that mess; file check begins before the doctors round starts.

	Aspects	Issues	Reasons
Q aspect	Economic	When do you check the file	Asking about time of checking files
	Spatial	Where do you keep patient files	Asking about place
X	Spatial	Well, sometimes I have it on my counter	the place
	Formative	Because I try to get these things done before starting the doctor round	Doing or achieving her work And be sure the work doing continuously
	Economic		Doing paper work before the doctor start their round
Economic	All that mess, file check begins before the doctors round starts.	To be sure all the patient files are arrange	

Table 5-7 Linking responses with aspects with Question T.7 (N.2.1)-

T.8 (N.3.2)-Question why does the nurse write the nurses note in a form of a story? (Narrative format)

Answer: its mean explain the details of the patient's condition written in a form of a story. I already told you that lack of improvement and development caused shortage and the absence of update. Documentation that is particular for nurse is supposed to developed and updated by the ministry because since 8 years ago nothing has changed and never developed. And when we ask for position paper, I think it does not l exist, especially the nurse that makes the position of the patient. Also, as for the emergency nurses' notes, we still update them through personal efforts from emergency management.

	Aspects	Issues	Reasons
Q	Analytic	Why does the nurse write the nurses note	Asking about the reasons for writing in narrative format.

		in a form of a story? (Narrative format)	
X	Analytical	Its mean explain the details of the patient's condition written in a form of a story	The nurse is giving details about her work: "... explain the details of the ...written in a form of a story", i.e. formative
	Formative		The nurse is doing his job from A to Z
	Formative	I already told you that lack of improvement and development	The nurse is emphasizing the lack of development.
	Economic	Lack of development	There is reasons cause the improvement.
	Analytic	Caused shortage and the absence of update.	Particular for nurse
	Economic	Documentation that is particular for nurse is supposed to developed and updated by the ministry	Shortage and absence of update
	Formative		It supposes to be update in order to improve.
Analytical	Because since 8 years ago nothing has changed and never developed	Distinction before and after	
Economic		There are no any changed from high authority.	
Juridical	Because since 8 years ago nothing has changed and never developed	The nurse is referring to responsibility of ministry: "supposed to developed and updated by the ministry. There is no any update from high level.	
Social		There is miscommunication among them.	

	Analytic	And when we ask for position paper. (Type of form), I think it does not exist, especially the nurse that makes the position of the patient. Also, as for the emergency nurses' notes, we still update them through personal efforts from emergency management	Different forms. Availability of format. The nurse takes responsibility to create that type of format. The nurses achieving their routine by their efforts.
	Economic		
	Juridical		
	Formative		

Table 5-8 Linking responses with aspects with Question T.8 (N.3.2)

T.9 (N.4.2)-Question why do you prefer to keep the file at the patient's bed not with the nurse?

Answer :On one hand, it is easier for the doctor to review the file when it is available at the patient's bed. On the other hand, I do not prefer keeping the file at that place (patient's bed) for confidentiality purposes. In actuality, the nurse is the one who keeps all these files.

	Aspect	Issues	Reasons
Q aspect	Juridical	Why do you prefer to keep the file at the patient's bed not with the nurse?	The nurse usually responsible to keep patient file in right place its part of her/his job (dx) deduce from researcher experience)
X	Analytic	On one hand, it is easier for the doctor to review the file when it is available at the patient's bed.	Comparison about work. The nurse says it's easier to keep patient files next to bed saving time. Because she thought its more easier and flexible for physician to find file
	Economic		

X	Analytic	On one hand, it is easier for the doctor to review the file when it is available at the patient's bed.	Comparison about work.
	Economic		The nurse says it's easier to keep patient files next to bed saving time. Because she thought its more easier and flexible for physician to find file inside patient room we need to consider time consumptions of physician
	Spatial	It is easier for the doctor to review the file when it is available at the patient's bed.	She pointed to place of patient file (places where the records visible)
	Juridical	On the other hand, I do not prefer keeping the file at that place. (Patient's bed)	Paper record could have two places. But, the nurse prefers one place rather than others.
	Formative	It is easier for the doctor to review the file when it is available at the patient's bed.	The nurse wants to achieve her work in process.
	Lingual	It is easier for the doctor to review the file when it is available at the patient's bed.	Physician can review patient's file during their checking at patient room.
	Faith	I do not prefer keeping the file at that place (patient's bed) for	She beliefs the nurses are the right one to keep patient file safe. (Deduce

Table 5-9 Linking responses with aspects with Question T.9 (N.4.2)

T.10 (N.4.2)-Question. Where do you think is the best way to keep the files secure?

Answer: I prefer to keep the files at my office, but this is impossible since the nurse needs them more than anyone else.

	Aspects	Issues	Reasons
Q aspect	Formative	Where do you think is the best way to keep the files secure?	As its part of routine work of nurses to keep patient file secure to achieve their work.

	Juridical		Asking the right place of patient file as the nurse handling patient file
A.	Ethical	I prefer to keep the files at my office	She thought her office is the best place to keep patient file.
	Faith		Because she beliefs patient file should be in secure place & she trust this place is her office
X	Juridical	But this is impossible since the nurse needs them more than any-one else	She mentioned the nurses are doing their job accurately.
	Lingual		Nurse usually write in patient file more than any-one else (dx)

Table 5-10 Linking responses with aspects with Question T.10 (N.4.2)

T. 11 (N.4.2) Question-according to your experience, do you prefer to use paper records or electronic records?

Answer: I prefer using the adjustable system. As for the electronic records, I do not have enough experience with that, but I think that when a fault occurs in the electronic records, then it is difficult to retrieve the data.

	Aspects	Issues	Reasons
	Juridical	Do you prefer to use paper records or electronic records?	Asking the nurse prefers according to her work experience
A	Juridical	I prefer using the adjustable system. As for the electronic records, I do not have enough experience with that	Because she prefer (adjustable system) depend on her work experience she prefer paper

X	Pistic		Beliefs in computer literacy.
	Formative	But I think that when a fault occurs in the electronic records, then it is difficult to retrieve the data	If there is any fault in process of electronic file will affect their work. She is talking about the difficulty of using a system: ". I do not have enough experience
	Analytic	I do not have enough experience with that, but I think that when a fault occurs in the electronic records, then it is difficult to retrieve the data	Differentiate between paper and electronic patient file (the problem if there is any fault will occurs

Table 5-11 Linking responses with aspects with Question T. 11 (N.4.2)

T.12 (T.2.1)-Question: Don't you believe that it has advantages?

Answer: Yes, I do since it is safer and less vulnerable to loss.

Question What are the advantages and disadvantages of paper records?

Answer The disadvantages: damage when exposed to fire, consumes more time, and subjects to management. As for the advantages: it is adjustable and modifiable.

	Aspects	Issues	Reasons
Q aspect	Faith	Don't you believe that it has advantages?	Asking about her trust and vision regard E-file.
	Juridical	What are the advantages and disadvantages of paper records?	Asking about the positive and negative points in E-file.
X	Ethical Juridical	Yes, I do since it is safer and less vulnerable to loss	Because E-file more secure and located in computer Because paper file easily access, can be moved from one place to another (between nurse station to rooms)

	Formative	The disadvantages: damage when exposed to fire,	Things could be happen to effect the life of paper record such as fire etc.
	Economic	Consumes more time, and subjects to management.	Paper file is wasting nurses time
	Lingual	It is adjustable and modifiable.	Nurses can change rewrite in paper file but, its not the same in E-file (I think subject of computer literacy)

Table 5-12 Linking responses with aspects with Question T.12(T.2.1)

T.13 ((T.2.1)--Question: What is the process of extracting files from the shelves?

Answer: At first, they print for us the appointments belonging to out-patient and quality reviewer from system, after that we take them and save them on the computer again, and then we extract and arrange the files for each clinic, then the nurses come and take them.

How many files do you extract daily? Nearly 200 files How much time do you need to extract 200 files a day?

Answer: About 6 hours and then writing (NA).). Not available in the shelves.

	Aspects	Issues	Reasons
Q aspect	Formative	What is the process of extracting files from the shelves?	Asking about work process to see how do the technician achieve their job
	Economic	How many files do you extract daily?	It terms of time she usually need to finish this work
		Nearly 200 files How much time do you need to extract 200 files a day?	
A	Lingual	At first, they print for us the appointments belonging to out-patient and quality reviewer from system, after that we take them and save them on the computer again, and then we	(Describe step by step her work) Aspect of interview.

		extract and arrange the files for each clinic, then the nurses come and take them	
X	Juridical	After that we take them and save them on the computer again, and then we extract and arrange the files for each clinic, then the nurses come and take them	what she deserves for doing this work (dx).
	Formative		Achieve the required work
	Lingual	That we take them and save them on the computer again,	Using computer (printout. Re-entry again in computer)
	Analytic	We extract and arrange the files for each clinic	Separation according to clinic / extracting files try to differentiate files according to clinic or reviewer
	Economic	We extract and arrange the files for each clinic, and then the nurses come and take them. About 6 hours	Mentioned time she usually need to extract file and number of patient file
	Physical	Then the nurses come and take them	Usually extracting file (using body)
	Social	They print for us, after that we take them and save them on the computer again, we extract and arrange the files for each clinic, then the nurses come and take them	Role of nurses and work as group work together
	Juridical Lingual	Writing (NA). Not available in the shelves.	Writing n/a and (dx) she does not have access

Table 5-13 Linking responses with aspects with Question T.13 (T.2.1)

T.14 (T.2.1)--Question: Why does the electronic file save time?

Answer: Because we need from six to seven hours to extract the file manually, but when it becomes electronic, then the process will become easier and faster and this work becomes dependent on the doctor him/herself, where the doctor will be extracting the file from the system.

	Aspects	Issues	Reasons
Q aspect	Analytic Economic	Why does the electronic file save time?	Asking to analyse a situation and give reason The reason for electronic file is saving time.
X	Economic (A)	Because we need from six to seven hours to extract the file manually.	E-file save time more than paper file, because she spends many hours in extracting files but if files become electronic it will be easier.
	Faith	But when it becomes electronic, then the process will become easier and faster	Her expectation if paper records becomes electronic will be faster
	Juridical	This work becomes dependent on the doctor him/herself,	Let the doctor or nurses see the patient file
	Formative	, Then the process will become easier and faster and this work becomes dependent on the doctor him/herself,	She is giving details about her work
	Kinematic	where the doctor will be extracting the file from the system.	She is referring to a physical action

Table 5-14 Linking responses with aspects with Question T.14 (T.2.1)

T.15 (N.5.3)- Question-why do you keep the file in one place?

Answer-If the doctor is the one who will examine the patient, then the files are located at the patient' s bed; however, if the nurse is going to examine the patient, then it takes the files with him/her while passing on patients.

	Aspects	Issues	Reasons
Q aspect	Analytical	, Then the process will become easier and faster and this work becomes dependent on the doctor him/herself, where the doctor will be extracting the file from the system.	Find out the reasons to keep file in one place and her point of viewed
X	Spatial	Files are located at the patient's bed	Take files near to patient
	Juridical		If the nurse doing her job accurately (dx
	Formative		Examining patient
	Social		Role of nurses (the fact of role)

Table 5-15 Linking responses with aspects with Question T.15 (N.5.3)

T.16 (A.1.3)-Question: What do you do if you opened a file for the patient and then discovered that he/she has already a file?

Answer: It happened many times. An error occurs when opening two files for the same person through miswriting the letters of the name. Also, there are the delivery cases, we open a file for the newborn via the mother's file, and make STICKERS for the baby. Then a nurse takes the child's file. In case that there are two files present, we follow the same method of newborn. (You need 2 tables one for new born and one for mistakes).

	Aspects	Issues	Reasons
Q aspect	Juridical	What do you do if you opened a file for the patient and then discovered that he/she has already a file?	The question is asking what is the procedure to follow, when ...
	Formative		The question is giving some background to formative issue, that she discovered that he/she has already a file

X	Formative	It happened many times. An error occurs when opening two files for the same person through miswriting the letters of the name.	The nurse is confirming that this process exists, i.e. finding a duplicate file.
	Economic	It happened many times	Happened many times.
	Formative	Here are the delivery cases, we open a file for the newborn via the mother's file,	Shaping the mother's file.
	Lingual	and make STICKERS for the baby,	
	Kinematic	"a nurse takes the child's file"	This is a movement aspect.

Table 5-16 Linking responses with aspects with Question T.16 (A.1.3)

T.17 (N.6.3) Question: How much time does the process of arranging the file take?

Answer: Here in the ICU I have 24 patients staying in the hospital for two weeks or more; they stay for long time. I follow up the entry of the new patient and make sure of it. Also, I make sure there are the same papers as in ER, admission. In addition, I make sure of the ID and make sure that all this information is in the patient's file.

	Aspects	Issues	Reasons
Q aspect	Economic	How much time does the process of arranging the file take?	Asking to assess length of time
X	Spatial	"Here in the ICU"	She is using the spatial aspect, "Here in the ICU" pointing to ICU
	Economic	I have 24 patients staying in the hospital for two weeks or more	Mentioned number of inpatient in ICU and length of stay.

	Formative	"I follow up the entry of the new patient"	She is giving the form of her work
	Juridical	"Make sure of the ID and make sure that all this information is in the patient's file.	To be sure of the work done properly
	Formative Juridical	I follow up the entry of the new patient and make sure of it, Also, I make sure there are the same papers as in ER, admission	Processing her routine work Make sure its done in proper way.
	Juridical	"All this information is in the patient's file."	She is confirming the appropriateness of an aspect of her work,

Table 5 17 Linking responses with aspects with Question T.17 (N.6.3)

T.18(C*.1.1) Question: In the case of electronic file, do you think you can dispense with paper entirely?

Answer :I do not think so.

Question: Why?

Answer: There are basic things that must be stored using a paper, such as patient data and the investigation; however, the progress notes can be saved in the electronic file. I mean that you cannot dispense with paper entirely. For instance, in the event of system failure, you can refer to the paper file since both are equally important. The most important is the problem of discharge summary.

	Aspects	Issues	Reasons
Q aspect	Faith	In the case of electronic file, do you think you can dispense with paper entirely?	Asking about the opinion of electronic file.
	Analytical	Why	Asking about the reasons of her answer.
A	Faith	I do not think so.	Giving her thought about electronic file.
X	Analytical	There are basic things that must be stored using a paper, such as patient data and the investigation, however, the progress notes	Difference between what needs be paper and what can be electronic.

	Juridical	can be saved in the electronic file	Document appropriateness.
	Economic		To be sure the progress note saved electronically.
X	Juridical	"Cannot dispense with paper entirely",	Document appropriateness (as above).
X	Formative	"In the event of system failure"	Failure.
X	Analytical	" You can refer to the paper file since both are equally important. The most important is the problem of discharge summary"	Explaining the importance of each file based.
	Economic		Mentioned the discharge summery is most important.
	Faith		She believes discharge summery is most important.
	Formative		In terms of importance.

Table 5 18 Linking responses with aspects with Question T.18(C*.1.1)

T.19 (T.4.1) Question: what is your job description and routine work?

Answer: when I came here I was assigned to investigation work. My routine work is before and now is different.

Question: can you tell me before first and then we will go through the latter

Answer: before I used to collect lab results. Every morning I would go to the lab and collect results from the day before i.e. yesterday. For OPD only. After that I bring it here in medical records to arrange it. Sometimes patients do 2 or 3 investigations. So I cr. After arranging, I

write the logbook and then put it on the computer. Check also whether there is any appointment for following day. So I priorities that task to check for following day.

	Aspects	Issues	Reasons
Q aspect	Formative Analytical Economic	What is your job description and routine work? Can you tell me before first and then we will go through the latter	Asking about the nurse job description. Asking in details about her routine work earliest and latest.
X	Formative Analytical Economic	When I came here I was assigned to investigation work. My routine work is before and now is different	Mentioned her type of her work Difference before and after. Earliest and latest
	Lingual	Collect lab results, that I bring it here in medical records to arrange it, that I bring it here in medical records to arrange it, write the logbook and then put it on the computer. Check also whether there is any appointment for following day.	Mentioned the the lingual work
	Formative Economic	Before I used to collect lab results. Every morning I would go... following day. Before, every morning and following day Sometimes patients do 2 or 3 investigations	Mentioned her work process in details. Mentioned the time Mentioned number of investigations for

			each patient.
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Table 5-19 Linking responses with aspects with Question T.19 (T.4.1)

T.20 (N.7.4) Question: What is the nature of your work?

Answer: When the doctor comes to see the patients and writes their discharge summary, we arrange the patient's files, so if he/she wants to make an appointment then we record that, and if he/she wants to be transferred to other clinic or specialist that is not in the hospital, I sign it from the doctor.

Question: Where do you get the file?

Answer: From clinics or emergency, if the patient comes to us from the clinics, we do all the procedures; we write the name of the patient, and we do the admission procedures. The file comes from medical records and other papers come from here.

	Aspects	Issues	Reasons
Question			
A	Kinematic Physical Lingual Formative Social	When the doctor comes to see the patients and writes their discharge summary, we arrange the patient's files	Doctor come (walking) to the ward Then check patient, Write discharge summary then, (Clerk arrange patient file) Giving order to ward clerk to retype it. Role of Communication between doctors and clerks

X	Formative Lingual	So if he/she wants to make an appointment then we record that,	Intend to make an appointment. The clerk did it.
X	Formative Physical Lingual	And if he/she wants to be transferred to other clinic or specialist that is not in the hospital, I sign it from the doctor	If patient need to be transferred to other ward. Transfer patient to somewhere else. Sign from doctor.
X	Spatial	From clinics or emergency, if the patient comes to us from the clinics	Place where patient come to them.
	Formative Lingual Social	We do all the procedures; we write the name of the patient, and we do the admission procedures.	Finishing the work process. Writing patient information. Working as the group (we).
	Spatial	The file comes from medical records and other papers come from here	Patient files bring from medical record or from the same station

Table 5-20 Linking responses with aspects with Question T.20 (N.7.4)

T.21(C.3.4)-Question: What was the nature of your work in outpatient clinics?

Answer: I was coordinating, receiving files, and creating new files. I used to create more than a hundred files a day.

Question: Was it done manually?

Answer: Yes, it was a manual process; I used to create more than one hundred files per day.

Question: Do you give these files serial numbers or what?

Answer: Yes, we give them serial numbers stored in a book; then write these serial numbers and the names next to these serials, then the serial number is stored in the file, and then it is sent to the clinic.

	Aspects	Issues	Reasons
A	Social Formative Lingual Economic	I was coordinating, receiving files, and creating new files. I used to create more than a hundred files a day.	Coordinating with other. Doing the required task. Receiving, creating files. Number of files.
X	Lingual Formative Juridical Economic	Yes, it was a manual process; I used to create more than one hundred files per day	Doing work manually Achieving the work process Emphasise to do her job properly. Numbers of files she creates per day.
	Lingual	Yes, we give them serial numbers stored in a book	Generating a serial files number.
X	Analytical Lingual Formative	Then, write these serial numbers and the names next to these serials, then the serial number is stored in the file, and then it is sent to the clinic.	Identify the patient Writing files number and patient name. Achieving the entire required task.

	Kinematic		Moving files from medical records department to clinics.
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Table 5-21 Linking responses with aspects with Question T.21(C.3.4)

T.22 (T.5.1) Question: What is your role in patient file?

Answer: Nurses' notes. We have to do arrangement.

Question: usually you process on the system and take the result from the system. So why do you need to print it out?

Answer: because after the doctors stamp, we should attach it in the manual file

Question: and why is it necessary to get stamped by the doctor?

Answer: so it is authenticated. It means the doctor saw it and approved it

Question: so, does the physician do this?

Answer: Yes, our job is to attach it in the patients file. So it is properly arranged according to dates

Question: so what else do you do in the patients file?

Answer: communication.

Question: so what sort of communication

Answer: supply of nurses notes.

Question: so what do you mean by procedure?

Answer: print from the computer.

Because of the closed nature of the answers, the interviewee did not offer down to earth issues. So, the interviewer extracted these by down to earth questions. The answers to these treated as multiple aspects.

	Aspects	Issues	Reasons
A	Formative Lingual Juridical	Nurses' notes. We have to do arrangement.	Achieving their routine work. Writing in nurses' notes. Arranging patient file properly.
X		Because, after the doctors stamp, we should attach it in the manual file	Doing the required job

Juridical		properly
Physical		Attached paper in the patient file manually (physically)
Formative		Achieving all required steps.
Lingual		Doctors stamp the document
Juridical	So, it is authenticated. It means the doctor saw it and approved it	Doing work steps harmony (continually).
Lingual		Doctor read and stamp document.
Analytic		Explaining the reason of stamping patient document.
Juridical	Yes, Our job is to attach it in the patients file. So it is properly arranged according to dates	Arranging patient file properly.
Economic		Organizing document according to dates.
Lingual		Attached, arranged patient files.
Lingual	Communication.	Communicating by writing
social		Endorsing work to next shift to update each other.
Lingual	Supply of nurses' notes.	Writing at nurses note.

Formative		Achieving their work as teamwork.
Juridical		Updating right information of patient situation.
Lingual	Print from the computer	Doing office work
Physical		

Table 5-22 Linking responses with aspects with Question T.22 (T.5.1)

T.23 (N.8.4) Question: so can you tell me your role in the patient file?

Answer: I am a newly appointed nurse. 4 months I have been here. So this is a new position for me. So my usual job description is an office staff. Following the policy and procedure of the hospital. I do proper documentation too.

Question: so what do you mean by proper documentation?

Answer: according to policy of our hospital. We have assessment, planning and implementation. If we reach our goal, if we implement smoothly etc. so proper documentation is when we implement something within the given time frame.

	Aspects	Issues	Reasons
A	Economic Juridical Formative	I am a newly appointed nurse. 4 months I have been here. So this is a new position for me.	Time consuming in a new position. Taking responsibility of a new job. History of her job place.
X	Lingual Formative Juridical	My usual job description is an office staff. Following the policy and procedure of the hospital. I do proper documentation too.	Identify her job description. And documented. Following the hospital policy to achieve

			requirement job. Doing her work properly.
Juridical Formative	According to policy of our hospital. We have assessment, planning and implementation		Following hospital policy Achieving the work steps.
Formative Economic Juridical Aesthetic	If we reach our goal, if we implement smoothly etc. so proper documentation is when we implement something within the given time frame		Reaching their goal. Doing job within the time frame. Proper documentation. Providing work smoothly.

Table 5-23 Linking responses with aspects with Question T.23 (N.8.4)

T.24 (N.9.3) Question: who is responsible to give medication for the patient?

Answer: staffs nurse.

Does she write it down herself or someone else does it for her?

Answer: No. Nurse by her-self. We do that through the patient care system. We are the one responsible for it. If you are looking after a specific patient, he or she is responsible for all the work for that patient. Medication, complaints about pain etc. the primary nurse responds immediately.

	Aspects	Issues	Reasons
A	Social	Staffs nurse.	Role of a person
X	Juridical Formative	No. Nurse by her-self. We do that through the patient care system. We are the one responsible for it.	Emphasising to do work by her-self. And nurses are responsible to do this via system. Using hospital system. (Achieving with system)

	Juridical	If you are looking after a specific patient, he or she is responsible for all the work for that patient. Medication, complaints about pain etc. the primary nurse responds immediately	Providing required work properly. And taking care for each patient
	Formative		
	Economic		Achieving all required work.
			Taking immediate action

Table 5-24 Linking responses with aspects with Question T.24 (N.9.3)

T.25 (N.10.3) Question: why is it important that everything should be documented?

Answer: it is very important because it shows how much you care about the patient. If you document properly that means you care about your patient.

Question: why do you think you should that?

Answer: it is the process of the hospital such as what you have done to the patient. Continuity of care is further endorsement of looking after the patient. It is also useful for the following shift that comes after us.

	Aspects	Issues	Reasons
A	Faith	It is very important because it shows how much you care about the patient.	She believes documentation is very important.
	Juridical		Taking care of patient.
	Formative		Providing evidence of patient care.
X	Lingual	If you document properly that means you care about your patient	Documentation.
	Juridical		Documented properly.
	Faith		She believes documentation is evidence of patient care
	Formative	It is the process of the	Processing hospital work.

	Formative Lingual Juridical Aesthtic Social	It is the process of the hospital such as what you have done to the patient. Continuity of care is further endorsement of looking after the patient	Processing hospital work. Writing at patient. (Documented at patient file). Doing responsible care for patient. Continuity of care. Endorsing to the next shift.
	Juridical	It is also useful for the following shift that comes after us	Doing their job right.

Table 5-25 Linking responses with aspects with Question T.25 (N.10.3)

T.26 (N.11.2) Question: what type of work you do on the system?

Answer: there are not many things for the Department of Newborn Babies, and there is also a special program on the system for NEW BORN babies.

Question: What is the idea of this program?

Answer: When a child is born, we enter him/her to the system by his/her mother file' s number and we enter all the child data to make new file for him/her that is separate from the mother' s file.

Question Do you modify the child data that were entered in the past?

Answer: I don't modify anything, I just separate the child data in a special file that is separated from his/her mother' s file because the Archive, if the medical records department, do not receive the file of the child if he/she is in the file of their mother. So when searching for the child's name in the system, a special file must be shown for the child with new number that is different from the number of their mother file.

	Aspects	Issues	Reasons
A	Analytic Lingual (X) Quantitative	There are not many things for the Department of Newborn Babies, and there is also a special program on the system for NEW BORN babies.	Differentiate a program from another Special program Lower amount of work to do by in system
X	Lingual	I don't modify anything, I just separate the child data in a special file that is separated from his/her mother's file because the Archive	Separating child from mother file.

Analytic		Separate mother and baby file
Formative		Process of creating new file for baby.
Juridical		Taking responsibility for mother and baby files.
Lingual	If the medical records department, do not receive the file of the child if he/she is in the file of their mother. So when searching for the child's name in the system, a special file must be shown for the child with new number that is different from the number of their mother file.	Receiving and sending files to medical records department.
Juridical		Newborn child should have separate file from his/her mother- proper document.
Formative		Creating new files for baby, this is one step of her work.
Economic (deduce)		
Analytic		Differentiate files.
Economic		Communicating with other department.
Social		

Table 5-26 Linking responses with aspects with Question T.26 (N.11.2)

T.27 (N.12.3) Question: can you tell me what are you doing in the patients file?

Answer: I am the one responsible for calling patients. I am the head nurse so I am responsible for the outside communication. So we will fill up the pre-operative check list

Question: so you fill it after receiving the patient or before?

Answer: No, after

Question: so why do you need to do that check list?

Answer: to know if the patient is ready for surgery. If all the required documentation and preparations are done. So we do the check list for those reasons

Question: Okay, so after receiving the patient what do you usually do?

Answer: we check the consent form first, which is not electronic. It should be written because the patient has to consent and sign. Then we check the assessment of the doctor, which must have been written in OPD (out patient department) or the ward. So we check what assessment they carried out on the patient. After that we also write in the nurses notes.

	Aspects	Issues	Reasons
A	Lingual Juridical Social	I am the one responsible for calling patients. I am the head nurse so I am responsible for the outside communication. So we will fill up the pre-operative check list	Calling patient, communicating other department. And filling forms. Responsibility to doing different task. Role of social communication
X	Analytic Juridical Formative	to know if the patient is ready for surgery. If all the required documentation and preparations are done. So we do the check list for those reasons	if patient ready for surgery. Be sure all patient document is fulfil before operation

			Following all work process
Formative	we check the consent form first, which is not electronic. It should be written because the patient has to consent and sign		Find out consent form
Analytic			Specifying the consent form should not be electronic (Differentiate work)
Lingual			Sign by patient.
Juridical			Consent
Lingual	Then we check the assessment of the doctor, which must have been written in OPD (out patient department) or the ward. So we check what assessment they carried out on the patient.		Finding out the forms
Juridical			To be sure written by responsible doctor.
Formative			Achieving the work process.
Lingual	After that we also write in the nurses notes.		Writing in nurses note.

Table 5-27 Linking responses with aspects with Question T.27 (N.12.3)

T.28 (N.13.1) Question: Do you think if the electronic file is entered to hospitals that we will dispense completely with the paper file and what is the percentage of this dispense?

Answer: It is possible to reach up to 60% because the application of the electronic file in hospitals needs to train old staff for a long period, but new employees do not need much time for training; it is possible that their training period could be for up to two months.

Question: Who do you expect in need of more training, nursing, physician or ward clerk?

Answer: The nurses do not need a long period of training, and let's not forget that even the nurses in this hospital are divided into segments; there is the Philippine nursing and the Saudi nursing. The Philippine Nursing has the ability to quickly learn more than others of other segments.

Most of physicians are depending on us (nurses); I don't think they need much training, about ward clerk they need to concentrate on patient file more than system.

	Aspects	Issues	Reasons
A	Economic Formative Lingual	It is possible to reach up to 60% because the application of the electronic file in hospitals needs to train old staff for a long period	Percentage of reduce paper file. And a period for training staff. Achieving to train hospital employees Training to use EMR.
X	Analytical Faith Economic	, But new employees do not need much time for training; it is possible that their training period could be for up to two months.	Distinguish between old and new employees. Believes the period of training for new staff will be shorter. A period for training staff.
	Faith Analytic	: The nurses do not need a long period of training, and let's not forget that even the nurses in this hospital are divided into segments; there is the Philippine nursing and the Saudi nursing.	Believes or proud of nurses ability. Classifying two groups of nurses.
X	Faith	. The Philippine Nursing has the ability to quickly learn more than others of other segments.	Believes the foreigners (Philippine) have ability to learn fast.

Formative		Ability to learn quickly.
Lingual		Learning ability.
Faith	Most of physicians are depending on us (nurses), I don't think they need much training,	She believes physicians don't need much training
Juridical		Physicians depend on nurse in terms of responsibilities. And trust
Analytic		Identifying the reasons, for physicians don't need much training.
Juridical	About ward clerk they need to concentrate on patient file more than system.	For non-health care giver need to focus on patient file more on system

Table 5-28 Linking responses with aspects with Question T.28 (N.13.1)

T.29 (N.14.2) Question: so what is your role in the patients file?

Answer: for me, I will provide the best practice. I apply my good skills to care for the patient.

Question: so what do you do with the file once you take it from the porter?

Answer: so we inform the patient by giving our names and telling the waiting times etc. we also tell the patient who their doctor and nurse will be. We also explain how to re position the bed, like up and down. After checking the whole file, we give it to the ward clerk. He then informs the doctor who does his investigations. But primarily we talk to the patient first. I give the orientation to the patient such as the doctor's name, physicians name, room no etc. if the patient is not happy, I take notes down with me. We also fill the initial forms, which are there before admission.

The first answer is not the role is treated as a multiple aspects.

	Aspects	Issues	Reasons
X	Ethical	I will provide the best practice. I apply my good skills to care for the patient.	Self-giving, doing her best skills to care for patient

	Formative Juridical		Achieving the requirement work. Doing her work in right way
A	Lingual	So we inform the patient by giving our names and telling the waiting times etc. we also tell the patient who their doctor and nurse will be. We also explain how to re position the bed, like up and down.	Informing patient some information i.e. nurses and physician names, waiting time, etc. and how to change or move bed either up or put it down. General orientation. Nurse emphasis to focuses on patient but not in patient file
X	Lingual	After checking the whole file, we give it to the ward clerk. He then informs the doctor who does his investigations	Checking patient file then give it to ward clerk.
	Formative		Processing the daily work
	Social	Communication role	
	Lingual	But primarily we talk to the patient first.	Give more attention for patient
	Lingual	We also fill the initial forms, which are there before admission.	Filling some patient forms

Table 5-29 Linking responses with aspects with Question T.29 (N.14.2)

T.30 (N.15.2) Question: why do you think patient file is better to be electronic?

Answer: because I am concerned with the file. Like this one, you cannot really concentrate. If it' s in the computer it will be easy. You just have to click. Except for nurses notes that you will need to type that' s what I have heard.

	Aspects	Issues	Reasons
A	Formative	Because I am concerned with the file.	Focusing more

			electronic file
X	Faith Formative Lingual Juridical Economic	If it's in the computer it will be easy. You just have to click. Except for nurses notes that you will need to type that's what I have heard. Cannot really concentrate.	She believes by using system make her work easily. Achieving the required work easily. Just one click to find the information at nurses note. Can not doing her work right Easy

Table 5-30 Linking responses with aspects with Question T.30 (N.15.2)

T.31 (N.15.2) Question: so what if you are given a guarantee, the system will not shut down and what is the disadvantage?

Answer: we need some orientation. But I think we will be okay after training.

Question: anything else

Answer: at the beginning it will be hard to adjust the time to type because we are not used to it.

	Aspects	Issues	Reasons
X	Social Formative Lingual	We need some orientation. But I think we will be okay after training.	Using "we" as group. Improving their skills by orientation of EMR. She thought training would

			help them to use EMR.
	Economic	At the beginning it will be hard to adjust the time to type because we are not used to it.	Time consuming, in early stage of using new system.
	Juridical		Difficulties to using system for typing
	Analytic		Clarifications of adjust the time for typing.

Table 5-31 Linking responses with aspects with Question T.31 (N.15.2)

T.32 (T.6.3) Question: so which one is faster for you to use paper or electronic records?

Answer: I think writing. I am fast with it. I told I am old to type too fast. But compared to writing I am fast. But some people are young and educated here so they should be all right.

Question: Do you think if electronic system is introduced we can stop the use of paper files?

Answer: of course. And as I told you we will use it and take it as a routine. Might be I am telling you now I am slow. But once it is implemented you might come and see my type without even looking at the keyboard. It's all about getting used to it.

	Aspects	Issues	Reasons
X	Faith	I think writing. I am fast with it.	He believes writing in paper record is faster than writing by using system.
	Lingual		Typing.
	Economic	I told I am old to type too fast. But compared to writing I am fast	Tim consuming for typing.
	Juridical		Doing the required work right. In paper work.
			Distinguish his ability for writing by using paper and electronic.

X	Faith	But some people are young and educated here so they should be all right.	He thought young and educated people are able to use electronic file.
X	Economic Formative	Might be I am telling you now I am slow. But once it is implemented you might come and see my type without even looking at the keyboard. It's all about getting used to it	Slowing process to use EMR, assuming by the time will improve his writing skills

Table 5-32 Linking responses with aspects with Question T.32 (T.6.3)

T.33 (C*.1.1) Question: could you tell me your job description and your daily routine work?

Answer: so in this hospital two of us are assigned to coding. So one is the in-patient coder i.e. Maryam and I am the outpatient coder. But if Maryam is not around I do coding for in-patient also. Our main aim is to provide accurate statistics of all cases that are asked by the reviewer or the ministry of health with certain diagnosis. So for e.g. if they ask for this case

Question: which one do you start coding for?

Answer: in-patient. Then for the outpatient, I must code all the follow up patients that are diagnosed or consulted by the doctor and arrived by the responsible nurses on the system, by using ICD 10.

Question: DO they ask statistics just for in-patient or outpatient as well?

Answer: for outpatient, they ask statistics for only psychiatric cases. If they Ministry of Health need statistics, they ask the hospital, and then I get the job to do it.

Question: why does the doctor not enter the diagnosis on the system himself?

Answer: that is the most questionable stuff. For more accuracy the doctor should enter it himself but it doesn't work like that here. For e.g. when the patient arrives, doctor does the diagnosis, he should enter it on the system and then we can code. That would be the best thing to do.

Question: so they have access to the system, why can't they do it themselves?

Answer: exactly. That's what should happen. It has been suggested a few times but hasn't been implemented yet.

Question: so from your experience what kind of problems do you face? In addition to this one?

Answer: this IT system is fine. Real problem starts when you don't know who to take the non-diagnosed file back to, the difficult ones. You have to research on your own. Check the Internet.

	Aspects	Issues	Reasons
A	Social	so in this hospital two of us are assigned to coding	
	Analytical	one is the in-patient coder i.e. Maryam and I am the outpatient coder	
X	Formative Social Economic	But if Maryam is not around I do coding for in-patient also	Doing the rest of work for the second coder Complete the work in absent of other coder Not available
	Formative Economic Juridical	Our main aim is to provide accurate statistics of all cases	Aim to achieve the word All cases Accurate statistic
	Formative	If they Ministry of Health need statistics, they ask the hospital, and then I get the job to do it.	To do the requirement task
A. Aspect	Formative	in-patient. Then for the outpatient	The process for the task
X	Analytical		Explaining the first task then the rest of work.
	Formative Juridical Analytical	I must code all the follow up patients that are diagnosed or consulted by the doctor and arrived by the responsible nurses on the system, by using ICD 10.	The process of work The nurses responsibility Using ICD-10

A	Analytical	For outpatient, they ask statistics for only psychiatric cases.	Clarifying the out-patient Identifying the case psychiatric
	Economic Formative	If they Ministry of Health need statistics, they ask the hospital, and then I get the job to do it	Need statistic I get the job to do it
X	Juridical Formative Lingual	For more accuracy the doctor should enter it himself but it doesn't work like that here. For e.g. when the patient arrives, doctor does the diagnosis, he should enter it on the system and then we can code. That would be the best thing to do.	Doctors are not doing their work in proper way. Not achieving the required work. Not enter diagnosis in system by themselves
	Faith Analytical Physical Lingual	This IT system is fine. Real problem starts when you don't know who to take the non-diagnosed file back to	Is fine (seems like to use the system satisfaction) Distinguish the problems Take the file back Checking the file
	Lingual	The difficult ones. You have to research on your own. Check the internet.	Research on your own.

Table 5-33 Linking responses with aspects with Question T.33 (C*.1.1)

T.34 (I.1.1) Question: what is the dictation and how does it work?

Answer: The dictation system is a telephone medical dictation system that is the doctor registers the report that they want on the phone and then it is sent via the system to a specialized company. After that, the company writes it and sends it to the doctor written in Word format; the doctor then views it

and may do some amendments. So, if it is right then he/she approves it and makes e-sign and then it is printed through the medical report.

There is a difference for doctors between accepting the idea of the system and between their application and the actual work on the system. This is because doctors praise the system a lot, but when it comes to application and work; only a few of them apply it and enter data into the system. Also, they ask the nursing to do this work for them because it accumulates work on them. So, you find a lot of files incomplete because they depend on the hard copy, i.e. the paper file.

	Aspects	Issues	Reasons
X	Lingual Formative Social	The doctor registers the report that they want on the phone and then it is sent via the system to a specialized company. After that, the company writes it and sends it to the doctor written in Word format;	Doctors register the report by using system and email, dictate then writing the report etc. The processing for dictating and writing the report. Role of communication between doctors and dictation company.
	Lingual	The doctor then views it and may do some amendments. So, if it is right then he/she approves it and makes e-sign and then it is printed.	The process of medical report (Reviewing, amendment, approving, e-sign and printing the medical report.)
	Quantitative Lingual Juridical Formative	Only a few of them apply it and enter data into the system. Also, they ask the nursing to do this work for them because it accumulates work on them.	Few doctors. Entering data, or asking nurse to enter data in doctor behalf. Depending on nurses to enter data (doctors are not doing their required work)

	Economic		Accumulates work.
	Juridical	A lot of files incomplete because they depend on the hard copy, i.e. the paper file.	Incomplete files.
	Economic		Using hard copy.

Table 5 34 Linking responses with aspects with Question T.34 (I.1.1)

T.35 (P.1.2) Question: Could you tell me what is your role in patient file?

Answer: I had part to write in medical record as well as the nurse do so, the ward clerk is responsible to organize the medical file they should contact medical record department, e.g. in medicine department average admission and discharge between 40 to 50 per day .the ward clerk should check any deficiencies at in-patient file before send the files to medical records.

	Aspects	Issues	Reasons
A	Juridical Lingual	I had part to write in medical record as well as the nurse do so,	Right, responsibilities to write in patient file. Documentation.
X	Juridical	The ward clerk is responsible to organize the medical file they should contact medical record department,	Ward clerk responsibilities.
	Formative		Achieving the process of patient records.
	Analytic	Classifying the role for doctors, nurse and ward clerk.	
	Economic	Average admission and discharge between 40 to 50 per day	Averages number of admission and discharge patient.
	Juridical	The ward clerk should check any	The responsible work for

	Lingual	deficiencies at in-patient file before send the files to medical records.	ward clerk. Checking patient files before patient discharge.
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Table 5 35 Linking responses with aspects with Question T.35 (P.1.2)

T.36 (P.1.2) Question: What do you think about patient file (paper and electronic) which one does you prefer?

Answer: Filing system depends on the hospital establish in some hospital medical record still partial not whole. I believe the less paper you use the more productivity you will do. This is what I believe. The most important things is a budget, e.g. here in this hospital there is not enough budget for hiring qualified staff to write medical report, there is a different between clerk and ward clerking, let me explain it for you in medical field, clerking usually means a resident physician who is clerking for patient medical history and do physical exam and fill-up paper so do the basic outline of patient problem list. But ward clerk is so many tasks to do. In general ward clerk means who is admitted who is discharge treating physician, consultant name, all income and outcome in department and should coordinating, a patient who is admitted typing discharge summery and medical report all typing work,

Answer: Question: How do they solve illegible handwriting?

In some hospital the physician dictated the discharge summery so it will be easy for ward clerk to type it. But even in dictation there is difficulty e.g. physician accent, which is, accepted world wild, also ward clerk should sorting out patient record.

	Aspects	Issues	Reasons
X	Faith	Filing system depend on the hospital establish in some hospital medical record still partial not whole	He believes filing depend on hospital establish.
	Faith Formative	I believe the less paper you use the more productivity you will do.	
	Economic	The most important things is a budget	Budget

	Economic		Not enough budget
	Juridical	Here in this hospital there is not enough budget for hiring qualified staff to write medical report, there is a different between clerk and ward clerking	For hiring qualified staff
	Analytical		There is a different between clerk and ward clerking
	Analytical	Let me explain it for you in medical field, clerking usually mean a resident physician who is clerking for patient medical history and do physical exam and fill-up paper so do the basic outline of patient problem list.	Explaining the difference type of work
	Juridical		Responsibility task
	Formative		The work process
	Lingual		Writing in file
	Juridical	But ward clerk is so many tasks to do. In general ward clerk means who is admitted who is discharge treating physician, consultant name, all income and outcome in department and should coordinating, a patient who is admitted typing discharge summery and medical report all typing work	Ward-clerk responsibilities.
	Lingual		Doing lingual task (admitted, all in come and out come, typing discharge summary and etc.)
	Formative		Processing the task
	Lingual	In some hospital the physician dictated the discharge summery so it will be easy for ward clerk to type it	The physician dictated the discharge summery
	Formative		Easy for ward clerk.
	Formative	But even in dictation there is difficulty e.g.	Difficulty to finish the

	Lingual	physician accent, which is, accepted world wild, also ward clerk should sorting out patient record	work Physician accent
	Juridical		Ward clerk should sorting out patient record

Table 5-36 Linking responses with aspects with Question T.36 (P.1.2)

T.37 (P.1.2) Question: What is/are the advantage/s and disadvantage/s of paper medical records?

Answer: In fact patient medical records is very important, e.g. without documentation we cannot say whether patient had these part of care and procedure etc.

Disadvantage is missing of some paper, to solve this problem it should be good system, e.g. in the past a patient had seven or eight record, there was not any system, patient came to hospital he could not remember his file number then a new file created for him. The disadvantage of EMR is the x-ray will be safe for short period then erased automatically. E.g. if a cancer patient retune back after one year, I won't be able to see his film or report. The film is safe for a month.

	Aspects	Issues	Reasons
X	Formative Faith Ethical Analytic	Patient medical records is very important, e.g. without documentation we cannot say whether patient had these part of care and procedure etc,	Importance of medical records. Believe MR is important X Emphasis the value of documentation. We cannot say whether patient had these part of care and procedure etc
A	Juridical	Disadvantage is missing of some paper,	Missing of some paper

			(work is not doing properly.
X	Analytic Formative Lingual	In the past a patient had seven or eight records, there was not any system, patient came to hospital he could not remember his file number then a new file will be open.	Describing the reason of multi files for one patient. The achieving the files process in the past. Generating a new file.
A	Juridical	The disadvantage of EMR is the x-ray will be safe for short period then erased automatically	Patient films delete automatically.

Table 5-37 Linking responses with aspects with Question T.37 (P.1.2)

T.38 (C*.2.1) Question: Who enters the data in the system? Why do you do it incorrect?

Answer: I am the one who enters data into the system; it is my job.

They told me when I work in this way, I must make some changes to the system and making changes to the system cost the hospital a lot.

Question: What do you want to change and how?

Answer: Because this system is not flexible that any change costs the hospital. We, Saudi employees, would like to develop our work and we are not like Filipino employees who keep everything unchanged.

	Aspects	Issues	Reasons
A	Juridical Lingual Faith	I am the one who enters data into the system; it is my job.	Her responsibility. Entering data into system. Proud of her job
	Formative Economic	Because this system is not flexible that any change costs the hospital.	System is not flexible. Cost for change hospital system.

Table 5-38 Linking responses with aspects with Question T.37 (C*.2.1)

Source table of count aspectual issues

Excerpt no	Int. no.	L a n.	Qua	sp at.	ki n.	ph y.	Bi o.	Ps y	An l	Fmv	Li ng.	Soc.	Eco.	A es.	Jur.	Et h.	Pis.	Total
1	N.3.2	S	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	3
2	N.1.2	S	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	3
3	N.1.2	S	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	4
4	C.2.1	F	0	0	0	0	0	0	0	0	4	1	0	0	2	0	0	7
5	N.5.1	F	0	0	0	0	0	1	0	2	2	0	1	0	1	0	0	7
6	N.2.1	F	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	5
7	N.2.1	F	0	1	0	0	0	0	0	1	0	0	2	0	0	0	0	4
8	N.3.2	S	0	0	0	0	0	0	4	4	0	1	4	0	2	0	0	15
9	N.4.2	F	0	1	0	0	0	0	1	1	1	0	0	0	2	0	1	7
10	N.4.2	F	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
11	N.4.2	F	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	3
12	T.2.1	S	0	0	0	0	0	0	0	1	1	0	1	0	1	1	0	5
13	T2.1	S	0	0	0	1	0	0	1	1	2	1	1	0	2	0	0	9
14	T.2.1	S	0	0	1	0	0	0	0	1	0	0	0	0	1	0	1	4
15	N.5.3	F	0	1	0	0	0	0	0	1	0	1	0	0	1	0	0	4
16	A.1.3	S	0	0	1	0	0	0	0	2	1	0	1	0	0	0	0	5
17	N.6.3	F	0	1	0	0	0	0	0	2	0	0	1	0	3	0	0	7
18	C*.1.1	F	0	0	0	0	0	0	2	2	0	0	1	0	1	0	1	7
19	T.4.1	F	0	0	0	0	0	0	1	2	1	0	2	0	0	0	0	6
20	N.7.4	F	0	2	1	2	0	0	0	4	4	2	0	0	0	0	0	15
21	C.3.4	F	0	0	1	0	0	0	1	3	4	1	2	0	1	0	0	13
22	T.5.1	S	0	0	0	2	0	0	0	2	6	1	1	0	4	0	0	16
23	N.8.4	F	0	0	0	0	0	0	0	3	1	0	1	1	3	0	0	9
24	N.9.3	F	0	0	0	0	0	0	0	2	0	0	1	0	2	0	0	5
25	N.10.3	F	0	0	0	0	0	0	0	1	2	1	0	1	3	0	1	9
26	N.11.2	F	0	0	0	0	0	0	2	2	3	1	1	0	2	0	0	11
27	N.12.3	F	0	0	0	0	0	0	2	3	3	0	0	0	3	0	0	11
28	N.13.1	S	0	0	0	0	0	0	3	1	1	0	1	0	2	0	4	12
29	N.14.2	F	0	0	0	0	0	0	0	2	3	1	0	0	1	1	1	9
30	N.15.2	F	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	5
31	N.15.2	F	0	0	0	0	0	0	1	1	1	1	1	0	1	0	0	6
32	T.6.3	F	0	0	0	0	0	0	0	1	1	0	2	0	1	0	2	7
33	C*.1.1	F	0	0	0	1	0	0	3	6	3	1	3	0	3	0	1	21

34	I.1.1	S	1	0	0	0	0	0	0	1	3	1	2	0	2	0	0	10
35	P.1.2	S	0	0	0	0	0	0	1	1	1	0	1	0	2	0	0	6
36	P.1.2	S	0	0	0	0	0	0	2	5	4	0	2	0	4	0	2	19
37	P.1.2	S	0	0	0	0	0	0	2	2	1	0	0	0	0	1	1	7
38	C*.2.1	F	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	5
TOTAL			1	6	4	6	0	2	28	64	58	15	37	2	56	5	19	303

APPENDIX.2

This appendix include all the tables from literature review that, has been mentioned and discussed in chapter. 7

Literature tables

Table 7-1 Miller and Sim (2004) Physicians’ use of electronic medical records: barriers and solutions.

Aspects	Issues	Text, page
Jur	Patient safety	“Patient safety and quality of care.” 116
Fmv	An important role in improving Evidence-based	“IT is recognized, as a tool with an important role in improving patient safety and quality of care. This, in particular, is shown to be important in promoting the practice of evidence-based medicine”116
Fmv	Improving quality & other benefits of EMR	“Electronic medical record (EMR) has the potential and ranging capabilities to improve quality, with research proven ability to improve quality and other benefits of electronic documentation”116
Eco	EMR functions	“It beneficial for viewing, prescription and test ordering, care management reminders, and messaging, among other EMR functions”116
Fmv	Key surface barriers	“Described two types of barriers: Key surface barriers” 119
Eco	Financial cost	“The high initial financial costs, slow and uncertain financial payoffs, and high initial physician time costs, are prominent. The other barriers are the Underlying barriers”
Fmv	Underlying barriers	“The other barriers are the Underlying barriers” 119
Eco	Technological difficulties	“Technological difficulties, complementary changes and support, the exchange of electronic data between the various systems, financial aspects”119

Soc	Interfacing and usage	“Physicians’ interfacing and usage of the system, in response terms, all have some underlying effect”119
Eco	Contrast to large practices, with big resources	“Barriers were most acute for physicians in places where the physician is working solo, or in a small-group practice, in contrast to large practices, with big resources”119
Jur Fmv	Barriers (preventing what should happen), Potential solutions	“Potential Solutions to it identified, as being barriers, to ambulatory EMR and the benefits it entails” 122-124
Eco Jur	Size of practice Appropriate to size of practice	“Regarding the effect of the size of the practice, the solutions also, are emphasized for solo/small-group practices”122-124
Fmv Soc	Solve problems Standards	“Problem of data exchanges, it suggested adopting ubiquitous standards to solve such problems”122-124
Fmv	Incentives and mandate to tackle problems	“Incentives and mandates, to tackle the problems”. 122-124
Ana Ling	Categorising barriers, Select system Suggestion for some sort of help	Problem of support, in the implementation and running of the systems, described as complementary changes, and offered a suggestion for some sort of help regarding the selection and eventual use of these systems

Table 7-1 (Miller & sim, 2004)

Table 7-2. (Arar et al. 2005) Arar et al. (2005) discuss benefits of EMR to the users, physicians, nurses and pharmacologists, in their decision-making and administration. They also discuss benefits to patients, such as improvement in communication.

Aspect	Issues	Text, page
Fmv Ling	EMR allows to review Easiness understanding	“That EMR allows to review patients’ medical records, medication profiles update, and order and for laboratory tests evaluation. 4. Moreover, it notes its easiness to understand and being more legible than PMR.5 “ 2
Jur	Medical errors	“Prescriptions can be sent electronically to pharmacists,

Jur	Medical errors	“Prescriptions can be sent electronically to pharmacists, helping to reduce medical errors associated with handwritten prescriptions”, 2
Fmv	Positive impact on patient role	“Computerized prescribing can have a positive impact on the patients’ role in pharmacotherapy”, 2
Eco	Decision making	“Risk–benefit decision making and can alert providers to potential prescription problems, including drug allergies and negative drug interactions” 2.
Jur	Alert to problems	
Jur	Professionalism (d: one element of professionalism)	“Suggests that professional use of a comprehensive EMR improves communication between patients and providers during medical encounters”, 2
Soc	Improve communication between patient and provider	
Soc	Physician and patient communication	EMR enhances physician–patient communication
Soc	Patient involve in medical	“Allows patients to participate and become more involved in the medical interview, thus shifting interactions towards patient-centredness.10”, 2
Jur	Interview Patient participation (d:	

Table 7-2 (Arar et al. 2005)

Table 7-3. (CRANE & CRANE 2006, p. 3) Crane & Crane (2006) are particularly interested in medical errors (four categories) and the impact EMR has on errors. Their discussion is theoretical rather than empirical, showing what those authors deem meaningful.

Aspects	Issues	Text, page
Jur	Medical error (inappropriate medication)	“There is an emphasis on medical error corrections or avoidance”, 3
Fmv	Failure to complete a planned action and Use of wrong plan to achieve aim	“Lists The IOM definition for medical error as the failure to complete a planned action as intended or the use of a wrong plan to achieve an aim”, 3

Ana	Categories of errors	“Medical errors fall into four main categories: diagnostic, treatment, preventative, and other”, 3
Jur	Patient safety	“Medication use or patient harm while the medication is in control of the healthcare provider or patient” 3
Jur Fmv	Medical error (preventable mistake) Involve preventable mistake	“Says that it involve preventable mistakes in prescribing and delivering medication to patients”4
Biotic	Side effect	“Prescribing two or more drugs whose interaction is known to produce adverse side effects, prescribing a drug to which the patient is known to be allergic” 4
Jur	Medical error	“The extent of medication errors is considered”, 4
Ana	Recognise (potential of failure),	“Recognize and evaluate the potential failures of a product or process and the effects of those failures”, 4
Ana Fmv	Identify actions Eliminate	“Identify actions that could eliminate or reduce the chance of potential failures occurring”, 4
Ling	Entire process	“Document the entire process”, 4
Jur Fmv	Patient safety and medical error Improve	“Experts suggest that adopting new technologies in a hospital setting will improve patient safety and patient care and reduce medical errors”, 4
Eco	Cost of implementing	“Others point to the cost of implementing and maintaining new technology”, 4,
Jur	Privacy	“Possible patient privacy concerns as possible resistance factors to adopting the technologies”

Eco	Business efficiencies	“Used a statistical model to predict the potential savings and business efficiencies”, 4
Jur	Privacy	“One of the major concerns about the new technologies, specifically EMRs, is patient privacy”, 4
Jur Soc	Resultant patient harm Provider and payer sharing info	“With providers and payers linked electronically and sharing patient records, privacy advocates are concerned about possible misuse of records and resultant patient harm”, 4
Jur	Security, privacy. Consent, and policy.	“Privacy advocates argue that stringent security procedures and privacy protocols, including patient consent, must be part of any public policy regarding EMRs”, 4
Fmv Ling Eco	Update continuously update Accessibility	“Medical records (EMRs), which both the patient and providers will have ready access to and which can be updated continuously”, 4

Table 7-3 (CRANE & CRANE 2006, p. 3)

(Green & Thomas 2008, p. 225) Green & Thomas (2008) discuss documentation and communication that support collaboration between physicians and nurses, and how EMR might improve or hinder these, based on empirical studies carried out by others.

Aspects	Issues	Text, page
Pis Soc Ling	Desire Sharing documentation Clear documentation	“That physicians desire nursing documentation with greater clarity and additional information. “, 225
Ling Soc Fmv	Indicate checklist Collaboration Insufficient	“Physicians indicate checklists alone for patient assessment and intervention data are insufficient for effective nurse/physician collaboration.”225
Fmv Eco Ling	Guide Invaluable references Narrative	“Narrative nursing summaries are invaluable references that guide medical treatment decisions”, 225
Fmv	Development EMR	“There is a note about health care technology is called to develop EMRs that enable nurses to document detailed patient data “225

Eco Ling Fmv	Lost or damaged pages Illegible handwriting Critical components	“ PMR, it says that paper medical records are viewed as critical components of patients’ hospitalizations, yet numerous problems are encountered, such as lost or damaged pages, illegible handwriting, and complex accessibility” (Stone, 2005, p. 84)
Fmv	Effective	“Effective EMR systems.”
Ling	Training	“Paper noted that EMR training provided to nursing staff focused on the use of checklists for nursing assessment and interventions”, 225
Ling	Additional information	“Checklist format did not provide a simple means to document additional information, such as patient-caregiver interaction, parental nurturing behaviours,”225
Ling	Document narrative data	“Other important psychosocial information. The EMR training instructed nurses to use a separate <i>nursing addendum</i> form to document narrative data not included in checklists”225
Soc Pist	Problem Oriented approach	“The nursing addendum called for nurses to learn a new problem- oriented approach to patient documentation, known as observation, intervention, and response.”225
Soc Fmv	Collaboration Successful collaboration	“Successful collaboration between nurses and physicians is positively associated with patient outcomes”, 226
Fmv Ling Soc	Effective communication Communication, written and verbal Professional collaborations	“Effective communication, both written and verbal, between nurses and physicians is a key component of professional collaborations “(Casanova et al., 2007; Nelson & Venhaus, 2005).
Soc	Collaboration	“And based on survey responses, pertinent patient data needed for successful nurse/physician collaboration were “226
Ling Fmv	Recording patient status Interventions	(a) Antecedents to changes in patients status, (b) documentation of changes in patient status, (c) nursing interventions performed in response to changes in patients’

		status, (d)
Jur Ling	Appropriate to nurses Document	“Challenge for the health care technology industry is to develop EMRs that enable nurses to document detailed patient data in a timely and straightforward manner. “, 227
Jur	Safety, quality	“EMRs can enable nurses and physicians to deliver safe, quality patient care”; 227
Fmv Jur	Developing effective EMR system. Collaborate	“It is essential that both nurses and physicians collaborate with technology specialists in developing effective EMR systems.”227
Ling	Documentation	“Documentation of physician notification, and (d) outcomes of interventions.”,227

Table 7-4 (Green & Thomas 2008, p. 225)

Table 7-5. (Beiter et al. 2008, p. 222) Beiter et al. (2008) discuss EMR in primary care, and the problems of paper records. Their empirical study of 13 physicians found that while there were benefits, EMR also take more physician time; decrease their rapport with the patients, etc.

Aspects	Issues	Text, page
Eco	Cost off maintenance	“Cost of maintenance and support, restructuring”222
Fmv Fmv Eco Ling	Productivity Malfunctions Inadequate space Training or knowledge	“Training or knowledge, inadequate space, computer malfunctions, temporary reduction in productivity”, 222
Psyc	Fear	“Productivity, fear”, 222
Soc	Physician–patient relationship	“With outside systems and a potential shift in the physician–patient relationship”
Ling Eco	Printing and transcribing costs. Cash flow, enhanced revenue, reduced paper,	Improved billing and cash flow, enhanced revenue, reduced paper, printing and transcribing costs

Ethical	Quality of care	“Quality of care, improved safety, improved patient education, improved co-ordination of care, simplification of research-related processes and increased legibility.” ^{10,14}
Jur	Safety	
Ling	Education	
Aes	Co-ordination of care	
Eco	Improve utilisation,	
Ana	Simplification of research-related processes	
Ling	Data	“And sharing of data.” ^{15,16}
Soc	Sharing of data	
Jur	Frustrated	“Frustrated by the EMR used in their clinics.” ¹⁷
Jur	Accuracy of MR	“Accuracy and legibility of medical records”
Ling	Legibility	
Soc	Interactions	“Interactions and in general physicians’ workload increased. ^{7, 17,18} . Bostrom et al reported that nurses believed that EMR improved the delivery and quality of health care”. ¹⁹
Eco	Workload	
Eth	Quality of health care	
Jur	Privacy confidentiality	“Reduced patient privacy and confidentiality”, ¹⁴
Eco	Attitudes	“Attitudes, knowledge and needs related to EMR”, ²²⁵
Fmv	Complexity	Hundreds of different paper-based forms
Fmv		
Eco		
Ling		

Table 7-5 (Beiter et al. 2008, p. 222)

Table 7-6. (Protti, Bowden & Johansen 2008, p. 287) Protti et al. (2008) discuss documentation and standards for health information, which others do not discuss, and the sharing of health information. The system they discuss is a kind of 'yellow pages' of health care providers, and they are particularly interested in long-term information use

Aspects	Issues	Text, page
Soc	Standards	“Communication standards “, 287
Ana Ling	See who Communicate electronically	“See who they can communicate with electronically”, 287
Ling Pist	Referring patients to specialists Favour	“It has been reported that primary care physicians increasingly favour referring patients to specialists who have automated records.”287
Soc	Shared clinical EMR data	“ Access to ‘share’ clinical EMR data. The authors are of the opinion that it is important to distinguish between a physician’s office/clinic”, 287
Ling	Shared EMR	“Shared Electronic Health Record “
Eco	Access to shared	“ Access to ‘share’ clinical EMR data. The authors are of the opinion that it is important to distinguish between a physician’s office/clinic (EMR) and a shared Electronic Health Record
Ling	Contact with primary care	“Medication profiles, waiting list information, online scheduling of primary care physician appointments, email contact with primary care physicians and online renewal of prescriptions by patients”, 287

Table 7-6 (Protti, Bowden & Johansen 2008, p. 287)

Table 7-7. (Ventura et al. 2011, p. 163) Ventura et al. (2011) are interested in health information at the bedside especially of long-term patients. They discuss transcription and recognise legislative requirements for information and the importance of technical issues and support.

Aspects	Issues	Text, page

Fmv	Improved treatment	“There is a confirmation that, and in order to improve
Jur	Imperative	The treatment of the most critical patients, it is nowadays imperative to implement a paperless “, 163
Eco	Vital pieces of information are	“A key element for a successful paperless implementation is the manner in which these vital pieces of information are.”163
Ling	Transcribe by hand	“In PMR, the currently used system for the majority of clinicians, is to transcribe by hand, human and machine generated data”
Jur	Legislative	Legislative disposition and internal regulation, which nonetheless deserve a great deal of attention and precision.
Ling	Transcription process	“Transcription process of medical orders into nurses’ records introduces a noteworthy source of inaccuracy”, 163
Jur	Source of inaccuracy	
Jur	Important to learn, involvement.	Above all, it is important to learn from prior evaluation regarding the system’s impact on the work organization and the involvement of clinicians, physicians and nurses, in the design and development of the information system. And administrations of drugs.

Table 7-7 (Ventura et al. 2011, p. 163)

Table 7-8. (Shachak et al. 2012, p. 186) Shachak et al (2012) emphasise the process of implementation of EMR, and the importance of managerial support for users. This represents quite a wide variety of situations and interests, and is thus seen as likely to supply a wide range of issues that are meaningful in the use of EMR.

Aspects	Issues	Text, page
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Fmv Eco	Improving quality and improving safety, efficiency of health care system Large investment	“Large investments aimed at facilitating adoption and benefits realisation, 3 there is a consensus that the potential of HIT for improving the quality, safety and efficiency of the healthcare system is not fully realised.” ^{4,5}
Fmv	Support from manager	“Support from managers and colleagues, and technical support.” ¹⁸⁶
Eco Ling Fmv	Timeliness Knowledge, and communication Counselling skills	“Characteristics of support and support personnel including timeliness , knowledge , and communication and counselling skills.” ¹⁸⁶

Table 7-8 (Shachak et al. 2012, p. 186)

Qualitative Analysis of Literature

This section lists the issues meaningful in each aspect from the tables in Chapter 5. The entries in tables in chapter 5 are collected together and summarised, to yield type issues. These are then grouped into type of issues. For literature, the source of the issue is indicated by '<s=xx>' where xx abbreviates the paper authors. Differences between the issues of meaningful in the literature and to the users are discussed in section

The following is the groups of DTE issues mentioned in literature by aspects as analyzing in chapter seven.

Quantitative aspect not applicable

Spatial aspect not applicable

Kinematic aspect not applicable

Physical aspect not applicable

Biotic aspect not applicable

Analytical aspect not applicable

The meaningful issues for literature:

- <S=CC> Categories of errors

- <s=mS> Categorizing barriers, Select system
- <S=CC> Identify actions
- <S=CC> Recognize (potential of failure),
- <S=PB> See who
- <S=bt> Complexity
- <S=bt> simplification of research-related processes

Formative Aspect

The meaningful issues for literature:

Effect on quality of care

- <s=aR> Effect of prescription
- <s=gt> Effective
- <S=GT>Effective communication
- <s=mS> An important role in improving Evidence-based
- <S=CC> Improve
- <s=aR> Improve
- <S=VT> Improved treatment
- <s=mS> Improving quality & other benefits of EMR
- <S=SH> Improving quality and improving safety, efficiency of health care system
- <s=ar> Positive impact on patient role

Improving communication

- <s=aR> EMR allows to review (3 stages of achievement==)
- <s=gt> Collaboration
- <S=GT> Successful collaboration
- <S=GT> Insufficient for collaboration
- <s=sh> counselling skills
- <S=GT> guide
- <S=CC> Update continuously
- <S=SH> Support from manager

Malfunctions

- <S=CC> Failure to complete a planned action and Use of wrong plan to achieve aim
- <S=bt> malfunctions
- <s=cc> Eliminate
- <S=bt> Complexity

- <s=gt> critical components
- <S=bt> reduction in Productivity

Problems solving

- <s=mS> Solve problems
- <s=mS> Incentives and mandate to tackle problems
- <S=GT> interventions
- <s=cc> Involve preventable mistake
- <s=mS> Potential solutions

Barriers to be overcome

- <s=mS> Underlying barriers
- <s=mS> Key surface barriers

System development

- <S=GT> Developing effective EMR system
- <S=GT> Development EMR

Lingual Aspect

The meaningful issues for literature:

Information

- <S=GT> Additional information
- <S=bt> Data
- <s=gt> Document
- <S=GT> Document narrative data
- <S=GT> Documentation
- <S=GT> lost or damaged pages
- <S=GT> lost or damaged pages (Information is not available)
- <S=GT> Narrative nurses summaries

Legibility

- <s=gt> illegible handwriting
- <S=bt> legibility
- <S=GT> Indicate checklist??
- <S=VT> Transcribe by hand
- <S=VT> Transcription process
- <s=gt> Clear documentation

- <S=bt> printing and transcribing costs
- <S=GT> Recording patient status

Verbal and written Communication

- <S=PB> Contact with primary care
- <S=PB> referring patients to specialists
- <s=mS> suggestion for some sort of help
- <S=CC> Entire process
- <S=PB> Shared EMR
- <S=PB> Communicate electronically
- <S=GT> Communication, written and verbal

Training and education

- <S=bt> Education
- <S=GT> training
- <S=bt> training or knowledge
- <s=cc> update
- <s=ar> Easiness understanding
- <S=SH> knowledge, and communication

Social Aspect

The meaningful issues for literature:

Relationship between patient and provider

- <s=aR> physician and patient communication
- <S=bt> physician-patient relationship
- <S=CC> Provider and payer sharing info
- <s=aR> Patient involve in medical interview
- <s=aR> Improve communication between patient and provider
- <s=aR> Improve communication

Physician and nurse's relationship

- <S=GT> collaboration between physician and nurses
- <S=GT> collaboration between physician and nurses
- <S=GT> professional collaborations
- <S=GT> problem Oriented approach

Interaction with patient

- <S=bt> interactions
- <s=mS> Interfacing and usage

Sharing

- <S=PB> Shared clinical EMR data
- <S=GT> Sharing documentation
- <S=bt> Sharing of data

Standards

- <S=PB> Standards
- <s=mS> Standards

Economic Aspect

The following are issues are meaningful in literature

Financial issues

- <s=mS> contrast to large practices, with big resources
- <S=SH> Large investment
- <s=mS> size of practice
- <S=CC> Cost of implementing
- <S=bt> Cost off maintenance
- <s=mS> Financial cost
- <S=bt>cash flow, enhanced revenue

Information as resource

- <s=gt> <a eco> Invaluable references
- <s=vt> <a eco> vital pieces of information are
- <S=PB> <A eco> Access to shared
- <S=CC> <A eco> Accessibility
- <s=mS> <A eco> EMR functions
- <S=bt> <a eco> inadequate space

Limitation of work environment issues

- <S=SH> <A eco> timeliness
- <S=bt> <a eco> workload
- <S=bt> <a eco> reduced paper,

Others

- S=bt> <a eco> Attitudes
- <S=bt> <a eco> Complexity
- <s=aR> <A eco> Decision making

Organization efficiencies

- <S=CC> <A eco> Business efficiencies
- <S=bt> <a eco> Improve utilization

The Aesthetic Aspect

The meaningful issues in literature

- <S=bt> co-ordination of care

The Juridical Aspect

The meaningful issues for literature:

Patient safety

- <s=aR> Patient participation (d: rights),
- <s=gt> collaborate (to ensure effective design)
- <S=CC> Patient safety
- <s=mS> Patient safety
- <S=CC> Patient safety and medical error
- <S=bt> Safety
- <S=GT> Safety, quality

Appropriate

- <S=GT> Appropriate to nurses
- <s=mS> Appropriate to size of practice
- <S=VT> Imperative (Appropriateness)
- <S=VT> Important to learn, involvement (Appropriateness system design)
- <s=aR> Professionalism (d: one element of professionalism)

Medical error

- <S=CC> Medical error
- <S=CC> Medical error (inappropriate medication)
- <S=CC> Medical error (preventable mistake)
- <s=aR> Medical errors
- <s=cc> Resultant patient harm

Privacy and confidentiality

- <S=CC> Privacy
- <S=CC> Privacy
- <S=bt> Privacy confidentiality
- <s=cc> Security ,privacy .consent , and policy.

Barriers

- <s=mS> Barriers (preventing what should happen),
- <S=bt> frustrated
- <s=ar> alert to problems
- <S=VT> Legislative

Accuracy

- <S=bt> Accuracy of MR
- <S=VT> Source of inaccuracy

The Ethical Aspect

The meaningful issues for the literature:

- <S=bt> Quality of care
- <S=bt> quality of health care

The Pistic Aspect

The pistic was found meaningful issues for the literature only in one place:

- <S=bt> co-ordination of care

Appendix.3

This appendix includes Ethical approval and participant sheet

Ethical Approval - Notes for Guidance

Des your proposal need approval from University Research Governance and Ethics Committee?

What have 'ethics' to do with *your* research? What's this about 'governance': another hurdle to jump before you can get on and use the little time you have to do some research?

First, all academic research worth the name adds to existing knowledge and is published.

Dissertations lodged in libraries and research reports that are circulated publicly need much the same attention as books and journal articles. The best academic journals and book publishers send what you submit to them for review by your peers. *The whole process is imbued with a code of conduct.* You must acknowledge your sources. Your claims to originality must be honest and properly researched. Co-researchers must be fully acknowledged and/or listed as co-authors. Reviewers must be impartial.

Second, if your research involves human subjects, and especially if they might be at risk from the research, *the subjects' rights and privacy must be respected.* It is important to put oneself in the position of the 'researched' and acknowledge that, if it were happening to you, *you* would want to know what it was about and whether it might put you at risk. If you were to find in the course of the research that it was not what you expected, *you* would want the freedom to withdraw. The rights of donors or their nearest relatives must be respected when human tissues are being researched. Subjects that are in any way vulnerable, or dependent on the researcher (as are students and patients, for example) should be given special protection. Any research involving children is especially sensitive, and must undergo ethical scrutiny. Human subjects have a right to anonymity and to know that confidentiality will be respected. Animal subjects must not be unavoidably harmed by research, and any research involving animals must comply with statutory regulation.

Is there any research that has *no* ethical implications? Probably not, but not all research needs *funding*. When it does so, the University already requires that the Principal Investigator (PI) complete an 'Approval' form, signed off by the Research Institute Director (RID), summarising the bid for grants or contracts for research. This form has had a new section inserted, which asks the PI and the RID to consider whether the study requires *ethical* approval. *If in doubt, say 'yes'*.

- The professional bodies, bodies that fund research, and sometimes (e.g. the NHS) managers of the sites in which research is conducted, have developed their own frameworks or codes of practice. These can be onerous for intending researchers, but have to be complied with.

In October 2002, Salford University introduced the formal process of University-wide Governance and Ethical Approval for new research proposals. This process takes place through the work of the Research Governance and Ethics Sub-Committee (RGEC) of the Research Committee. For postgraduate research students the RGEC deals with research proposals that are part of a higher degree by research. Research proposals on taught programmes fall outside of the RGEC remit and are dealt with at Faculty level. For academic staff the RGEC uses the University's Research grants and contracts approval process to assess the ethical dimensions of any application.

The committee reviews applications for ethical approval, *whether external funding is involved or not.*

- If your bid deadline is imminent and the sponsor does not require prior ethical approval, and if the budget has approval from the University, go ahead and apply for the funding.

- The committee will have to be satisfied that the appropriate ethical standards are met before research with human or animal subjects or with human tissue actually starts.
- The committee's procedure is to circulate full research applications electronically within a secure e-mail discussion group of members sworn to confidentiality. Allow 20 days for this.
- If the members cannot agree, they meet at a prearranged time at the end of the month.
- If approval is not granted then, you will be advised about what is needed to obtain approval and can amend the proposal and resubmit.

Nationally, the issue of ethics and governance in research has arisen with particular emphasis in work with NHS patients and social care clients. If this sort of research is proposed, you may well need Local Research Ethics Committee approval and the Research Governance clearance of the Trust(s) with whom you are working, as well as that of the University. In this case, the University committee's aim is to avoid the usually much longer delays you will encounter if your protocol does not meet LREC standards. However, the University procedure on ethics extends well beyond the NHS and its requirements. *Research that involves human and animal subjects and the use of human tissue will almost certainly require the University committee's approval.* The University has a code of practice and a disciplinary procedure to cover breaches in such a context as this and also that of conduct with respect to other members of the academic community. All this applies to both academic staff and research students (MRes, MPhil, PhD).

The ethical and efficient conduct of research is the direct responsibility of principal investigators and, where students are engaged in research, of supervisors. Research Institute Directors at Salford have a key role in ensuring that those who undertake research either have the capacity to do it or are mentored by those who do have the necessary skills.

Universities also have a clear responsibility to develop a culture among academic staff and trainee researchers in which attention to both governance and ethics in research becomes accepted practice. To achieve and maintain a working culture, the University has to have an agreed framework and the means to implement it.

Further documentation can be found on the [R&GC web-site](#), including two versions of an ethics form (for PGRs and staff) that intending applicants should fill out. Faculties have or will develop alternative means for approving undergraduate and taught Masters projects. The RGEC has worked with EDU to develop a short course at which both the procedures of the committee and the principles behind them are discussed in a participatory way.

What is 'informed consent'?

- The subject (relative) must know the purpose of the study, what it entails for the subject and whether there is any risk to the subject (including psychological distress)
- The subject (relative) must have the right to withdraw consent once given at any stage
- The investigator must undertake to protect the confidentiality of the subject
- In the event that the results are published, the investigator must protect the identity of the subject, unless the subject consents to be named (i.e. waives anonymity)
- Applicants for approval from RGEC should prepare a short, accessible statement for the subject to read containing the above
- Accompanying this information sheet, there should be a form asking for signed consent, and spelling out conditions 2-4

- The RGEC must see the information sheet and consent form in advance of any data collection
- The RGEC also needs a completed ethics approval form and a copy of the protocol (proposal) in which is highlighted for its attention a consideration of the ethical issues raised by the proposal and how the investigator proposes to resolve them

Research Governance and Ethics Committee

Ethical Approval Form for Post-Graduates

Ethical approval must be obtained by all postgraduate research students (PGR) prior to starting research with human subjects, animals or human tissue. A PGR is defined as anyone undertaking a research rather than a taught degree, and includes MRes, MPhil and PhD. The student must discuss the content of the form with their dissertation supervisor who will advise them about revisions. A final copy of the summary will then be agreed and the student and supervisor will 'sign it off'. The applicant must forward a hard copy of the Form to the Contracts Office once it has been signed by their Supervisor and an electronic copy emailed to the Research Governance and Ethics Committee through Max Pilotti m.u.pilotti@salford.ac.uk.

(The form can be completed electronically; the sections can be expanded to the size required)

Name of student : Ghadah Mohammad Khojah

Course of study : PhD School of Business University of Salford

Supervisor : Prof . Andrew Basden

1. Title of proposed research project

Using Dooyeweerd's aspect to understand the issues of using EMR and PMR

2. Project focus

The focus of the project is to explore the diversity of usage of Electronic Health Records (EHR) as well as Paper Medical Records (PMR) by using Dooyeweerd's aspects. This research will utilize Dooyeweerd's aspects in order to illustrate the current issues of

Medical Records. by interview staff in medical records such as medical record technician ,clerking , administration and how they are dealing with paper records issues (dealing with patient data inside and outside medical records department , and explore how the social relationship is effecting the patient information . the capability to disclose some information for relative or family member .in addition point of view about electronic medical records if they are negative thought and why or if they are against electronic . in terms of patient electronic records I would like to interview the I information Technology Department to explore the role of IT department in medical records and if is there any co-coordinating between them for example if there are deficiency in electronic medical records who responsible to complete it ? see how health care giver is anticipating with electronic records? do the medical records have the right to update or modify some forms in patient records? do the entire patient forms in both electronic and paper records .

in terms of stakeholder I would like to interview with physician, nurses, administration ect and what is the role of each one of them and if they are negative or positive and why?

3. Project objectives (maximum of three)

To investigate issues are discussed about EMR & PMR
To investigate overlooked issues in EMR & PMR
To investigate the reasons for higher aspects than other studies

4. Research strategy (for example, where will you recruit participants? What information/data collection strategies will you use? What approach do you intend to take to the analysis of information / data generated?)

This research will be conduct in UK hospital and elsewhere and other medical facilities
The approach that the method of this research will be case studies. By conducting a thorough literature review with particular reference to the EHR and BPR literature and Pilot study. At the end i will use Dooyeweerd's aspect to analysis the issues of using

EMR and PMR

5. What is the rationale which led to this project (for example, previous work – give references where appropriate)

- 1- My background & work experience an a medical records assistant director in my home country Kingdom of Saudi Arabia
- 2- Dooyeweerd's aspect will help me to understand the complexity of patient records
- 3- Limitation of current treatment in literature review like AHIMA (American Health Information Management Association)
- 4- An earlier study conducted by Brender et al*. (2000) has identified Electronic Medical Record and Paper Medical Record as two of the hottest topics in health informatics research within the next decade. * Brender, J., Nohr, C. and McNair, P. (2000) 'Research needs and priorities in health informatics', *International Journal of Medical Informatics*, Vol. 58, pp. 257-289

6. If you are going to work within a particular organisation do they have their own procedures for gaining ethical approval – for example, within a hospital or health centre?

YES

If YES – what are these and how will you ensure you meet their requirements?

The researcher will be providing an official letter describing the research project and other relevant documentation such as a consent form, a participant information sheet where key information regarding the research will be provided, as well as a consent withdrawal form.

All ethical procedures will be followed in accordance to the Governance arrangement for NHS that apply for conducting research within the healthcare sector. For this the researcher will be informed by the relevant hospital and any actions will be undertaken accordingly before the data collection process starts.

7. Are you going to approach individuals to be involved in your research?

YES

If YES – please think about key issues – for example, how you will recruit people? How you will deal with issues of confidentiality / anonymity? Then make notes that cover the key issues linked to your study

The research will require the involvement of a number of key actors within the participating hospital such as doctors, nurses, administrative and technician. The participating hospital as well as the names of all participants will be kept confidential. This is clearly stated in the participant information sheet which will be distributed to the participating healthcare professionals.

8. More specifically, how will you ensure you gain informed consent from anyone involved in the study?

The researcher has developed a consent form as well as a participant information sheet. The former will be required to be signed by all research participants. This form will then serve as a proof to the fact that he/she consents to the research itself and to the information he/she provides through his/her participation to the research project. In particular, the participants will be provided the following information: what the project is about, how the data will be used and where to terminate their participation. All this information and some further issues are being explained in the participant information sheet. A summary of the interview results will be provided to all research participants at the end of the data collection process and analysis phase for them to sign.

9. Are there any data protection issues that you need to address?

YES

If YES what are these and how will you address them?

1-I will ensure the protection of data to comply by the anonymity of the participants
2-Following the Governance arrangement for NHS principle

10. Are there any other ethical issues that need to be considered?

There are no other ethical issues that need to be addressed

11. How many subjects will be recruited/involved in the study/research? What is the rationale behind this number?

Approximately 12 participants from different units across the participating hospital or facilities to be interview to give reasonable number of different type

Please attach:

- A summary in clear / plain English (or whatever media/language is appropriate) of the material you will use with participants explaining the study / consent issues etc.
- A draft consent form – again in whatever media is suitable for your research purposes / population.
- A copy of any posters to be used to recruit participants

Remember that informed consent from research participants is crucial, therefore your information sheet must use language that is readily understood by the general public.

Projects that involve NHS patients, patients' records or NHS staff, will require ethical approval by the appropriate NHS Research Ethics Committee. The University Research Governance and Ethics Committee will require written confirmation that such approval has been granted. Where a project forms part of a larger, already approved, project, the approving REC should be informed about, and approve, the use of an additional co-researcher.

I certify that the above information is, to the best of my knowledge, accurate and correct. I understand the need to ensure I undertake my research in a manner that reflects good principles of ethical research practice.

Signed by Student

Date

In signing this form I confirm that I have read and agreed the contents with the student.

Signed by Supervisor

Date

*Please also complete and sign the attached Risk Assessment Form.

UNIVERSITY OF SALFORD

Research Governance and Ethics Committee

HEALTH AND SAFETY

RISK ASSESSMENT OF STUDENT PROJECTS

All student projects should undergo risk assessment. It may be that the assessment of risk is minimal and no further action would be necessary, but you are required to demonstrate that risk has been considered.

Please answer the following questions with regard to the project.

1. ***What is the title of the project?***

Using Dooyeweerd's aspect to understand the issues of using EMR and PMR

2. ***Is this project purely literature based?***

NO

If YES, please go to the bottom of the page and sign where appropriate.

3. ***What are the ethical issues to be considered?***

There are no ethical issues that need to be considered

4. ***Does the project involve the use of ionising or other type of "radiation".***

NO

5. ***Is the use of radiation in this project over and above what would normally be expected, for example, in diagnostic imaging?***

NO

6. **Does the project require the use of hazardous substances?**

NO

7. **Does the project carry any risk of injury to the participants?**

NO

8. **Does the project require participants to answer questions that may cause disquiet / or upset to them?**

NO

If the answer to any of the questions 4, 5, 6, 7 or 8 is YES, a risk assessment of the project is required.

Signature of student

Date

Signature of supervisor

Date

Participant Information Sheet

Research Title

Transition from paper record to electronic record: a Dooyeweerdian reading

The purpose of this document is to inform the participants on key issues related to this academic research study. The focus of the study is to explore the diversity of usage of Electronic Health Records (EHR) as well as Paper Medical Records (PMR) by using Dooyeweerd's aspects.

This document is to provide information about the research and your role in this study so that you can decide whether you would like to participate or not in the research. If any additional information about the research is required you can get in touch with the researcher or supervisor whose contact details can be found at the end of this document

Why have I been invited to participate in the research?

You have been invited to participate in this research because you will be able to provide daily experience of using Medical Records and in what extent it affects your work practices.

Is my participation compulsory?

Your participation in the research is entirely voluntary.

How will I participate in this research?

You will contribute to this research by sharing your opinions, experiences and expectations of medical records with the researcher usually by means of interview.

What if I decide to withdraw from the study?

Participants are free to withdraw from the study at any stage in which case .IF the participant wishes any data or quotation they have provided to be discarded, please tick the box in the withdrawal slip. In this case the participants will be asked to complete the accompanying withdrawal slip and forward it to the researcher.

Are there any risks associated with the participation to the research?

The research does not carry any known risks or hazards to the mental or physical well being of the research participants.

What happens in the case of a problem occurring?

If concerns of any kind arise and participants would like to express any complaints they can refer to the researcher's academic supervisor whose contact details are available at the end of the document.

What is the researcher's policy towards confidentiality?

- Any information including sensitive data provided will remain confidential.
- Your responses will be confidential. No individuals will be identifiable from any collated data, written report of the research, or any publications arising from it
- Data held on computers and 'hard' copy files will be held securely access to which will be available only to the principal researcher

What will happen after the data collection process?

The results of the research study will be analysed and published in the final PhD thesis that will reside in the University's library. Possibly included in publish paper and other publication.

What does Dooyeweerd's aspects mean?

Dooyeweerd is attempted to describe the reality of life in philosophic thought.

Further Information and Contact details

Further information about the University of Salford and the Post Graduate Research in particular can be found in the following web address: <http://www.research.salford.ac.uk/>

Information regarding the research project can be obtained from the researcher, Ghadah Khojah or her PhD supervisor, Pro, Andrew Basden whose contact details are shown below:

Researcher	Academic Supervisor
Ghadah Khojah	Prof. Andrew Basden
Maxwell 517 Salford Business School University of Salford Salford	Maxwell 304 Salford Business School University of Salford Salford

Greater Manchester M5 4WT UK	Greater Manchester M5 4WT UK
Tel.: (+44) 7765137320	Tel.: (+44) 0161 2952913
Email: G.khojah@edu.salford.ac.uk	Email: A.Basden@salford.ac.uk

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