Journal of Theoretical and Applied Information Technology
31st March 2016. Vol.85. No.3

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

# PILOT STUDY OF EHRS ACCEPTANCE IN JORDAN HOSPITALS BY UTAUT2

**MALIK BADER. ALAZZAM, [1], ABD. SAMAD HASAN BASARI [2], ABDUL SAMAD SIBGHATULLAH [3] , MOHAMAD RAZIFF RAMLI[4], MUSTAFA MUSA JABER[5], MOHD HARIZ NAIM[6]**

[1,2,3,4, 5, 6] Faculty of, Information and Communication Technology, Universiti Teknikal Malaysia Melaka (UTeM), 76100 Durian Tunggal, Melaka, Malaysia

Email: malik_alazzam@yahoo.com

**ABSTRACT**

Purpose: Electronic health records (EHRs) exchange improves hospital quality and reduces health costs. However, few studies address the antecedent factors of healthcare professionals' intentions to use EHR system. We examine the factors that effecting on EHRs acceptance by Unified Theory of Acceptance and Use o[f Technology (UTAUT2) model, this is a new methodology for evaluating acceptance of EHRs. We propose a theoretical model to explain the exercise behavior of health care professionals' to use an EHR system acceptance.

The goal from this study to investigate the factors that affect the acceptance of electronic health records system by healthcare professionals. This study applied in Jordanian hospitals which use EHR system. Our objectives to build a clear vision of the factors that affect the user acceptance of the system by pilot test to be the start of an in-depth study and expanded in the future, based on a preliminary study

Methods: We conducted a pilot test survey in Jordan hospitals to collect data from healthcare professionals who had experience using the EHR systems. A valid sample of 22 responses from 70 questionnaires were collected for data analysis to pilot test

**Keywords:** *EHRs, Healthcare Professionals, UTAUT1, UTAUT2, Healthcare Professionals, Acceptance, Trust Factors*

## 1. INTRODUCTION

The electronic health record (EHR) is taken as the spine associate the consolidation of various information tools (e.g., test system, emergency information, electronic prescription, DSS, telemedicine, and digital imagery) that could better the acceptance of indication into health care professionals' decisions. By such indication in daily hospital, practice could enable a safer and more able healthcare system. Literature review supports numerous benefits of EHR for patients . The main benefits reported is the increased quality of care resulting from patients having their major health data accessible to their different health care provider that can safely improve the coordination of care. In addition, boost the efficiency of primary care practice The EHR support empowered citizens to actively take part in decisions concerning their health, and be used to way the transfer of recommended preventive care through primary care practices . The EHR is furthermore a device that enables knowledge exchange and decision making through healthcare professionals in hospitals by providing them with relevant, up-to-date information ,and timely [2]

## 2. CURRENT KNOWLEDGE OF EHR ACCEPTANCE

The employment of EHRs is presently supported in many high-income nations [3]. For instance, the USA Institute Medicine has qualified the EHR as ''an important technology'' for eHealth [4]. However, the rate of EHR acceptance by healthcare professionals remains slow in countries such as the US [4, 5], United-Kingdom, and Canada [7]. An growing body of knowledge on EHR implementation illustrations that a common of projects are discontinued after the experimentation phase of their assessment [8]. Matters associated with the slow flow of the EHR include: important start-up funds, lack of financial incentives, suboptimal technology, low importance, and resistance of possible users [9]. EHR acceptance by healthcare professionals requires significant financial investment and learning effort, however introduces radical change to every single aspect of hospitals work [10]. Also, perceptions towards the use of EHR

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

may vary between health professionals groups, adding to the complexity of acceptance this technology in a pluralist eHealth .[11]

## 3. LITERATURE REVIEW

**Unified Theory of Acceptance and Use of Technology (UTAUT)**

Researchers have conducted technology acceptance educations for over two decades now. They have used several theories and models to carry out these studies in different environments with different part of study. Findings from these studies vary. The authors of UTAUT model unified eight theories and models which include Theory of reason Action (TRA) Technology acceptance model (TAM), Motivational model (MM), Theory of planned behavior (TPB) combined TAM and TPB (C-TAM-TPB) Model of PC Utilization MPCU. Innovation Diffusion Theory (IDT) and Social Cognitive.[11–19]

Theory (SCT) Bandura (1986). The unification by the scholars sum up all the concepts from the eight models to four determinants, which expects intentions, usage, and 4 moderators of the key relationships [21]. Figure 1 illustrates the relationships that exist in the UTAUT model. The model has four EV, which refers to exogenous variables, EE, which refers to effort expectancy, PE which indicates to performance expectancy, SI which refers to social influence, and FC which mea facilitating conditions. The endogenous variables are the technology intention to use and behavior. There are other four moderators namely age, experience, gender, voluntariness. Performance expectancy is known, as a degree individual believes in the benefit of the system to performance [12, 21].

The amount of ease related with the use of the system is an important indicator towards technology intention to use which calls effort expectancy. The degree of an individual perceives on the important of new system used is also significant indicator towards technology intention to use. The degree of an individual believes on the effective of organizational and technical infrastructure exists that needs to support the use of the system is an important indicator which called facilitating condition.

The choice of this model in this study is justified by its worldwide and integrative attitude, incorporating a wide variety of explanatory variables from the core theoretical models developed to define technology acceptance and use. In particular, [21] carried out an in- depth analysis of literature on this topic and proposed a unified model that integrates the contributions public to the previous theories. Hence, it is reasonable to expect a theory that mixes the most important contributions from other models to be greater to the previous theories description of technology acceptance and use.[20]

**UTAUT2**

[15] Spreads the unified theory of acceptance and use of technology (UTAUT) to examine acceptance and use of technology in a consumer context. That the goals of UTAUT2 integrates three concepts into UTAUT: HM, PV, and HT. the demographic characteristics of service users' were used as moderatos variables namely experience, age and gender to control the effect on the BI and the use of technology. The findings have derived from two-channels online survey conducted with user of technology. The data collected took four months from 1,512 of the clients of mobile. As compared to UTAUT, the additions target in UTAUT2 produced a substantial enhancement in the variance described in BI.

**Hedonic Motivation (HM)**

Hedonic motivation (HM) can defined as the intrinsic motivation such as fun, enjoyment or pleasure when using a technology because of technology for its own sake, and it has known an important construct in defining technology acceptance and use. HM is similar to perceived enjoyment or playfulness to TAM as an intrinsic motivation element, [14, 22, 23]

**Price Value (PV)**

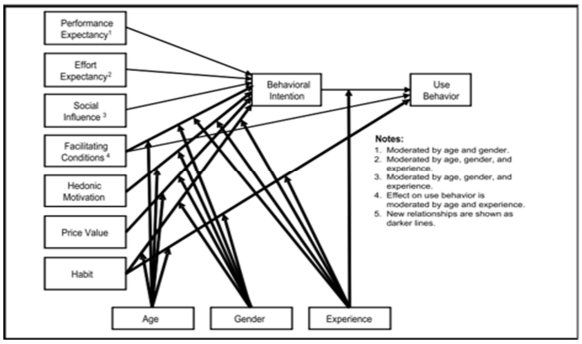
In general, people chose the services or products when their benefit gives more than the price value compared with its cost .Therefore, price value can be defined as learners' cognitive tradeoff among the seeming benefits of the applications and the economic cost, [14, 23, 24]

**Habit (HT)**

Habit (HT) is one of a strong predictor of future technology use[25]. Habit actually has been known as the degree to which individuals incline to implement behaviors routinely for of learning [14, 22]

Figure 1 UTAUT2 [15]

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195




**Electronic health record system**

Information and communication technologies (ICTs) contain a collection of effective tools to collect, store, and exchange eHealth-related information [1]. In that regard, it is believed that ICT could improve quality, safety, and cost-performance of healthcare services. Through the applications of ICTs for the health care sector, the electronic health record (EHR) is considered as the linchpin. Plumping for the consolidation of various orders (e.g., electronic prescription, emergency info, test ordering, telemedicine, digital imaging) that could better the uptake of evidence inside hospital decisions. Using such evidence in daily clinical practices could enable a solid and more efficient EHR system Patients, professionals, organizations, and the public in general are thus expected to benefit from EHR system. Literature review supports several benefits of EHRs for patients [2] . One of the main benefits described is the increased quality of care resulting from patients having their essential health data accessible to their different providers [26] . Based on relevant disease management programs [27],[28] EHR could support empowered citizens to actively take part in decisions regarding their health. The EHR is also a tool that facilitates knowledge exchange and decision making among healthcare professionals by providing them with relevant, up-to-date information, timely.

Table 2 provides a snapshot view of the studies conducted on the employee adoption of the EHRs.

*Table 1: Ehrs Adoption Studies*

| Author | Description | origin | Method, simple size | Factors |
|---|---|---|---|---|
| [29] | investigate empirically the impact of organizational culture | Jordan | Questionnaire, 271 employees | organizational culture |
| [30] | Examines EHR acceptance factors in an academic-based eHealth | Us | Questionnaire, 802 faculty | Physician involvement. Adequate training, Physician autonomy. Doctor-patient relationship, Perceived ease of use, Perceived usefulness, attitude about EHR usage |
| [31] | To assess adoption of electronic health records (EHRs) | Us | Survey. 155 children's | Functionalities. |
| [32] | the effect of (EHR) acceptance | | Surveyed, 72 | influence on patient care, interference with other activities, influence on communication and relationships, billing process, |
| [2] | To examine variation in the adoption of electronic health record (EHR) | Us | Survey, 4484 physicians | size availability of EHR functionalities, (functionality use, |
| [33] | to study the role of business case analysis in healthcare organizations' | Us | Case study interviewed 43 organizational | Cost external factors, size and complexity, stage of EHR adoption, structure of health system-physician relationships, geographic location, |
| [34] | implementation usage behavior of Electronic Medic Records system | Jordan | 7 hospitals ,700 questionnaires | Usefulness Ease ,ease of use |
| [35] | Health information using the Medical Evidence Gathering and Analysis through Health IT (MEGAHIT). | US | Case study Interviews with 43 participants | governance dimensions |
| [36] | patient safety from hospitals in six developing countries | Egypt, Jordan Morocco, Sudan Tunisia Yemen | Survey 10 group | Standers |
| [37] | to find out the status of electronic private healthcare information protection and safeguards | UAE | Qualitative, quantitative, 115 Chief Security | security of private and personal information |

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

| | | | | |
|---|---|---|---|---|
| [26] | exploring the factors influencing behavior and adoption of USB-based Personal Health Records (PHR) | Taiwan | Questionnaires 1549 | Higher Usage Intentions, Perceived Usefulness |
| [38] | literature review is used to gain knowledge about the medical and information security cultures involved | US | literature review, 95 articles | security behavior<br>Behavioral change agents<br>Information security behavior |
| [39] | Previous studies concerning the security and privacy (EHRs) | | Literature review 775 articles | Security and privacy |
| [40] | analyze barriers perceived by different healthcare | Saudi Arabian | Case study 158 participated | Human , Financial , Laws and Policies, Organizational ,Barriers, Computers and IT Professional |
| [41] | EHR acceptance and utilization by physicians in Jordan | Jordan | Interviews, questionnaire 500 | acceptance and utilization<br>TAM |

Because of the recent issuance of UTAUT2 model in March 2012. the author has conducted a comprehensive review of all the studies that have been used since the establishment of UTAUT2 Model has been published research paper in March 2015 entitled (**Review of Studies with Utaut2 as Conceptual Framework).** The aim of that paper is to variance and integrate results from various paper using the Unified Theory of Acceptance and Use of technology (UTAUT2) with its extensions. To detecting type among studied results, sources of discrepancy among those results, neither other present relationships that may come to light in the context of these articles. Studies from which that paper was prepared were derived from Emerald, EBSCOhost databases, Science Direct, Out of 17 studies gleaned 2 were on education, , 2 were on the web, 3 were on Health, 2 on social, 4 were on mobile, 2 were on the consumer,1 were on banking and 1 were on different forms.. The Results from these papers are several. That paper table thematically and chronologically literature where (UTAUT2) have been applied. The review identified the Author, Topic, Sample, Size, Location, and theoretical model used. It moreover contain the Statistical techniques applied, the aims of the article and the outcomes,[28] [20] **The study showed that he does not have any previous literature UTAUT2 model used to determine the factors in electronic health records by accepting users**

## 4. RESEARCH HYPOTHESIS

### EHRs and UTAUT2

The UTAUT model has been widely used in the EHR adoption and acceptance which is shown in Table 1. The employees will find the EHR system (in this case Jordan) useful if it helps them to perform the functions of the Directorate efficiently and effectively. Performance expectancy, effort expectancy and social influence, hedonic, price value, habit will directly affect the intention to use of the EHRs by the officers and staff. Thus, a high level of intention to use is likely to increase employee adoption of EHRs. H1. Performance expectancy is positively related to intention to use EHR system. H2. Effort expectancy is positively related to intention to use EHR system. H3. Social influence is positively related to the intention to use EHR system. H4. Facilitating conditions are positively related to the intention to use an EHR system. H5.Hedonic motivation is positively related to intention to use EHR system.H6. Price value is positively related to intention to use EHR system.H7. Habit is positively related to intention to use EHR system.

## 5. RESEARCH METHODS AND RESULTS

### Retest of UTAUT2

This study will be conducted primarily through the use of quantitative methods, to understand and to provide background and contextual information with regard to the acceptance of EHRs in Jordan hospitals. A correlational study design will be used to determine the existence of relationships between the dependent and independent variables in the conceptual model. A detailed description of the study phases is provided below.

A total of 32 items were used to measure the 9 constructs in the proposed extended technology acceptance model based on the Unified Theory of Acceptance and Use of technology UTAUT2 And demographics Necessary demographics

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

were also collected for the Purpose of valid comparisons to be made within the context.

The phenomenon of information technology has widely embedded with the activities of business and service sectors. The massive global and local market competition forced the corporations to re-structure their systems and their methodologies that are important for consolidating their competitive and help them to survive in the economic market. The conflict between quality insurance and cost reduction was a main challenge for many corporations and finding a bridge to fill the gap between them was at the heart of those corporations' goals. Information technology has been considered as a crucial vehicle for driving the achievement of the organization's goals effectively and efficiently. It does so through minimizing the cost of manually services and enhancing the quality of time responsiveness and other criteria. The health sector was not absent of using this great innovation especially in documentation and knowledge exchange between the hospitals themselves and the hospitals with patients. However, technology selection and acceptance is not an easy mission and it always associated with many challenges such as the goal of the hospital, the behavior of users, the characteristics of the technology and the users, the potential benefits of this technology and others. A large number of studies from various disciplines have conducted whose age upper than 51 were the lowest at 9.10%. The employers whose experience above 10 years were the majority of participants in this survey with approximately 59.10%, followed by those whose experience less than 2 years with percentage of 18.20%.

to describe and examine the critical success factors that influence the acceptance of technology users and among of those studies is studies by [15], [21]. The focus of those studies was to examine the critical success factors on the Acceptance and Use of Technology (UTAUT). The findings of this study nominated eight critical success factors for Acceptance and Use of Technology (UTAUT). Those factors are Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value, and Habit, Behavior. In the vein with this model, this study aims to examine the Acceptance and Use of Technology (UTAUT2) through examining [15], [21] theory in the health sector in Jordon. The main aim of selecting this theory is owed to the comprehensive knowledge that contained which can be used in any context. While the main aim of selecting, health sector in Jordon is owed to the fact that this sector is a vital sector that contributes positively to the country economy.

**Demographic Characteristics**

A survey was distributed to over than 70 user in tow hospital who using EHRs and the collected number of respondents is 22 respondents. As shown in the table (1), the majority of respondents were women with 54.5% compared to 45.5 male. The majority participants was those whose age upper than 41 and lower than 51 with percentage of 45.5%, while those

**Result of Pilot Test**

**Demographic Characteristics** Table (3)

| Variable | Description | Frequency | Percentage |
|---|---|---|---|
| Gender | male | 10 | 45.50% |
| | Female | 12 | 54.50% |
| Age | 21-30 | 3 | 13.65 |
| | 31-40 | 7 | 31.80% |
| | 41-50 | 10 | 45.50% |
| | 51-60 | 2 | 9.10% |
| Experience | 1-2 Years | 4 | 18.20% |
| | 3-5 Years | 2 | 9.10% |
| | 5-10 Years | 3 | 13.65% |
| | Above 10 | 13 | 59.10% |

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Table (4)

| Variable Group | No. Items | Item | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| Performance expectancy | 4 | I would find EHRS useful in my job | 2.00 | 5.00 | 4.0455 | .89853 |
| | | Using EHRS increases my chances of achieving things that are important to me | 1.00 | 5.00 | 3.5455 | 1.22386 |
| | | Using EHR St helps me accomplish things more quickly. | 2.00 | 5.00 | 3.9091 | .97145 |
| | | Using EHRS in my job would increase my productivity | 1.00 | 5.00 | 3.6818 | 1.39340 |
| Effort Expectancy | 4 | Learning to operate EHRS would be easy for me | 1.00 | 5.00 | 3.9091 | 1.30600 |
| | | My interaction with EHRS is clear and understandable | 1.00 | 5.00 | 3.6818 | 1.42716 |
| | | I find EHRS easy to use | 1.00 | 5.00 | 3.5455 | 1.40500 |
| | | It is easy for me to become skillful at using EHRS | 1.00 | 5.00 | 3.8182 | 1.46828 |
| Social Influence | 3 | People who are important to me think that I should use EHRS | 1.00 | 5.00 | 3.3182 | 1.21052 |
| | | People who influence my behavior think that I should use EHRs | 1.00 | 5.00 | 3.2727 | 1.27920 |
| | | People whose opinions that I value prefer that I use EHRS | 1.00 | 5.00 | 3.7273 | 1.16217 |
| Facilitating condition | 4 | I have the resources necessary to use EHRS | 1.00 | 5.00 | 3.5909 | 1.05375 |
| | | I have the knowledge necessary to use EHRS | 2.00 | 5.00 | 3.9545 | .89853 |
| | | EHRS is compatible with other technologies I use | 1.00 | 5.00 | 3.4091 | 1.00755 |
| | | I can get help from others when I have difficulties using EHRS | 1.00 | 5.00 | 3.5909 | 1.29685 |
| Hedonic Motivation | 3 | Using EHRs is fun. | 1.00 | 5.00 | 3.1364 | 1.42413 |
| | | Using EHRs is enjoyable | 1.00 | 5.00 | 3.2727 | 1.31590 |
| | | Using EHRs is very entertaining. | 1.00 | 5.00 | 2.9545 | 1.46311 |
| Price Value | 3 | EHRS is reasonably priced | 1.00 | 4.00 | 2.6364 | 1.21677 |
| | | EHRS is a good value for the money | 1.00 | 5.00 | 2.6818 | 1.46015 |
| | | At the current price, EHRs provides a good value | 1.00 | 5.00 | 2.7273 | 1.54863 |
| Habit | 4 | The use of EHRS has become a habit for me | 1.00 | 5.00 | 3.5909 | 1.09801 |
| | | I am addicted to using EHRs | 1.00 | 5.00 | 3.9545 | 1.13294 |
| | | I must use EHRs | 1.00 | 5.00 | 3.3182 | 1.21052 |
| | | Using EHRs has become natural to me | 2.00 | 5.00 | 4.0000 | 1.15470 |
| Behavior | 3 | I intend to continue using EHRs in the future | 1.00 | 5.00 | 3.9545 | 1.17422 |
| | | I will always try to use EHRs in my daily life | 1.00 | 5.00 | 3.7727 | 1.34277 |
| | | I plan to continue to use EHRs frequently | 1.00 | 5.00 | 3.6818 | 1.24924 |
| Intention to use | 3 | I frequently used EHR to understand health problem | 1.00 | 5.00 | 3.3182 | 1.24924 |
| | | I often use EHR to serve patient | 2.00 | 5.00 | 3.6364 | 1.21677 |
| | | I frequently use EHR to found information about health problem | 2.00 | 5.00 | 3.9524 | 1.20317 |

**Reliability Test**

The goodness of measures was gauged in this study by using reliability test. The reliability or internal consistency of measures was tested using Cronbach's alpha test. The analysis starts with evaluating the appropriateness of the data which must be over than 0.7 according to Uma Sekaran (2003). As shown in table (3), the overall results of Cronbach Alpha indicate that all factors are reliable and the internal consistency of the item's measurements of those factors is also reliable and can be used in this study.

First, the performance expectancy refers to the expected performance of using EHRs technology which is measured by four items as shown in the table (2). According to the results shown in table (3), the Cronbach Alpha of this factor is 0.9, which considered as a very reliable because it is higher than the minimum reliability at 0.7.

**Second**, effort expectancy variable, which indicates to the degree of ease associated with

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

the use of the system. This variable consists of four items as shown in table (2). The Cronbach Alpha of this variable as shown in table (3), is reliable at 0.909 and the items consistency are reliable to answer research questions.

**Third**, Social Influence refers to the degree to which an individual perceives that important others believe he or she should use the new system. This variable consists of three items as shown in table (2), while the Cronbach Alpha is shown to be reliable at 0.876.

**Fourth**, Facilitating condition defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system. This factor contains four items which are shown in table (3). The Cronbach Alpha of this factor is reliable at 0.876.

**Fifth**, Hedonic Motivation is defined as the fun or pleasure derived from using a technology, and it has been shown to play an important role in determining technology acceptance and use. This indicator contains three items which shown in table (3), while the Cronbach Alpha is reliable at 0.952.

**Sixth**, Price Value which refers to the cost of the technology and the differences between organizations and customer. The price value measured by three items as shown in the table (2). while the Cronbach Alpha is reliable at 0.883. Price value is not in the content of the study because the study is talking about electronic health records applied by the electronic government in the Ministry of Health. The study target health care professionals as employees, not as customers , The other reason is, as noted in the table (2) that answers the mean is 3 and the means to measure the questionnaire is I (do not know). (2.7727, 2.7273, 2.5455) For these reasons, we exclude this factor.

**Seventh**, Experience and Habit which reflect the opportunity to use a target technology and is typically operationalized as the passage of time from the initial use of a technology by an individual.

**Eighth**, behavior always motivated by the experience of using the technology where the high experience motivates the behavior of uses EHRS technology. The behavior measured through three items which shown in table (2), while the Cronbach Alpha test indicates to reliability in 0.941 as shown in table (3).

**Finally**, the intention to use is the dependent variable which indicates to the use of EHRS and measured through three items shown in the table (2). The Cronbach Alpha of this factor is reliable at 0.917.

To sum up, all results are shown to have a high reliability test which reflect to the consistency of the internal items

And the validity of using them in this study

Cronbach Alpha Table (6)

| Variable | Number of Item | Number of delete item | Cronbach Alpha |
|---|---|---|---|
| Performance expectancy | 4 | 0 | 0.9 |
| Effort Expectancy | 4 | 0 | 0.909 |
| Social Influence | 3 | 0 | 0.876 |
| Facilitating condition | 4 | 0 | 0.876 |
| Hedonic Motivation | 3 | 0 | 0.952 |
| Price Value | 3 | 3 | 0.883 |
| Habit | 4 | 0 | 0.874 |
| Behavior | 3 | 0 | 0.941 |
| Intention to use | 3 | 0 | 0.917 |

**Trust And Technology**

Technology online became a buzzword in every aspects of our life. It is heavily used in the service sector especially in knowledge transactions. It does so because service sector produces intangible goods which do not need to be physically storage or transferred. Technology online also used as intermediate tool in industrial sector. It facilitates knowledge transfer between the departments and even between the productions lines and control processes. Nowadays the new generation of people are using technology as a tool for studying and bridging the borders. Therefore, technology is embedded with human life in almost all activities. There are many types of technology which differs according to the used services. For example, past decades, e-commerce and e-government have globally witnessed a rapid growth and received a considerable attention from the practitioners as well as the academies. The importance of technology motivates many studies in the worldwide to explore the factors that play central role in technology acceptance. [1],

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

**Trust Literature**

Trust was shown to be an important factor that motivates the acceptance of technology use especially in government sectors [40–47]

Trust can be seen from the quality and integrity of the information [42]. trust in the security of the online itself [43–45], or trust in the quality of system services [40], [41], [43–47]

The concept of trust in technology acceptance has different meanings to different users under different studies as shown in the type below.

Table ( 7): Trust items

E-government trust typology [50]

| | Definition | Dimensions /requirement |
|---|---|---|
| stored data | trust in the data storage and management accessible in the electronic health records system | Authentication, Authenticity, Authorization, , Confidentiality, Privacy, Integrity |
| service | trust in the system of records Services E-health | Problem responsiveness, Transparency, fficiency, Communication, Usefulness, Ease-of-use |
| information | trust in the information provided from the electronic health records system | Information Reliability/validity, Information Adequacy, Information Relevance, Information Understand ability , Information Accuracy, Information Currency |
| system | trust in the construction and stiffness system of electronic health records | Correctness, Availability, Security, Failure, Accountability, Response time |
| transaction | Trust in the transaction from the system | Integrity, Confidentiality, Non-repudiation, Privacy, Security |
| government organization | trust in the government agent | Benevolence, Competence, Integrity, Predictability |
| institutional system | Trust in the support system for electronic health records institutional system | Legal and regulatory framework, Third-party guarantees, International standards, Directives, Escrows |

In this research, the focus is on the health industry in Jordan where technology plays a central role in facilitating the treatment process and enhance the quality services of the hospitals. This sector forms an important source of Jordan economy and consider a unique brand in the Middle East region. Thus, enhancing the quality service of this sector is one of the most important task of Jordan government. Recently, the EHRs has been used by four leading hospitals that organized by the ministry of public health in Jordan. These hospitals are Princess Badiya Hospital, Princess Rahma Hospital).

As mentioned above, the importance of trust in technology acceptance is seen differently from one context to others and from one users to others. Therefore, there are many factors where trust can be measured. Table 2, is shown trust items that were derived from intensive literature review and reliable papers such as [42] [42] , [43] [44] , [42] [45],[46] ,[47] [48],[45] [42], [43] ,[49]. Those items were classified under two wide groups namely trust in system (TS) as shown in Table 2 which consist of 26 items and trust in information (TI) which consist 10 item.

**Pilot test trust typology**

In order to address how importance those items to EHRs in Jordan, a pilot test was conducted with 22 respondents were selected from two hospitals. Pilot test was suggested by many scholars to be used before conducting survey to name [51], [52].

These respondents are working in statistic department and they directly and daily engage with the activities of EHRs. Table (2) summarize the average of 36 item that used in the trust typology. First, items from 1-26 are the factors of trust system, while items from 27 to 36 are the information trust items. As shown in the Table below, the system items from 1-15 are below than the average. Therefore, those items will deleted from the final questionnaire. While in the other hand items from 16-26 are upper than average, and then grouped under system trust in the final questionnaire. In contrast, the information trust consists of 10 items started from 27-36. There are 3 items below the average

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

which are 34, 35 and 36. Those 3 items were excluded from the final group, while 8 items remained and been tested in the following tables.

Table (8): Average result of trust

| | | Items | N | Min | Max | Mean | Std. Deviation |
|---|---|---|---|---|---|---|---|
| TS | 1 | EHRs provides verification of user identity | 22 | 1.00 | 3.00 | 1.5455 | .67098 |
| TS | 2 | EHRs provide the actual identity of the user as claimed | 22 | 1.00 | 3.00 | 1.8182 | .73266 |
| TS | 3 | EHRs provide authorization to access control of stored data according to the entity's privileges/rights of use | 22 | 1.00 | 2.00 | 1.5000 | .51177 |
| TS | 4 | EHRs ensure the confidentiality of information accessibility | 22 | 1.00 | 3.00 | 1.5455 | .73855 |
| TS | 5 | EHRs provide services which enable a direct, bidirectional communication | 22 | 1.00 | 4.00 | 2.5909 | .85407 |
| TS | 6 | EHRs provide services which are useful to the citizen for the intended purpose and facilitate their tasks | 22 | 1.00 | 3.00 | 1.8182 | .50108 |
| TS | 7 | EHRs ensures that the system is up and running, is fully functional whenever needed and is protected from denial of service | 22 | 2.00 | 4.00 | 2.8182 | .85280 |
| TS | 8 | EHRs ensures that the system is protected against intrusion threats | 22 | 2.00 | 4.00 | 2.8182 | .50108 |
| TS | 9 | EHRs provides protection services which allow for non-repudiation, intrusion detection and prevention and legal action | 22 | 1.00 | 4.00 | 1.8636 | 1.03719 |
| TS | 10 | EHRs ensures that there is protection from unauthorized manipulation of data during transmission | 22 | 2.00 | 4.00 | 2.5455 | .59580 |
| TS | 11 | EHRs cares about the users and is motivated to act in the user's interest and not opportunistically | 22 | 2.00 | 3.00 | 2.5909 | .50324 |
| TS | 12 | EHRs makes good faith agreements, tells the trust and fulfills promises | 22 | 1.00 | 3.00 | 1.8636 | .99021 |
| TS | 13 | EHRs provides information in the application of laws, policies and regulations regarding online transactions | 22 | 1.00 | 3.00 | 1.4091 | .79637 |
| TS | 14 | EHRs provides services according to the quality protocols, standards and mechanisms for online transactions | 22 | 1.00 | 3.00 | 1.4545 | .59580 |
| TS | 15 | EHRs provides of guarantees ensuring and verifying the expected outcome of a transaction | 22 | 1.00 | 4.00 | 2.2727 | .98473 |
| TS | 16 | EHRs ensures that the data collected will be solely used for the intended purpose | 22 | 3.00 | 5.00 | **4.1818** | .73266 |
| TS | 17 | EHRs ensures that stored data are protected from unauthorized manipulation/alteration | 22 | 3.00 | 5.00 | **4.2273** | .61193 |
| TS | 18 | EHRs provide responsive services which effectively respond to the problem in question | 22 | 3.00 | 5.00 | **4.2273** | .75162 |
| TS | 19 | EHRs provides services which are delivered in a time and cost effective way | 22 | 3.00 | 5.00 | **4.2273** | .75162 |
| TS | 20 | EHRs provides services which are convenient and easy-to-use | 22 | 3.00 | 5.00 | **4.2273** | .61193 |
| TS | 21 | EHRs ensures that the system works properly and produces the correct output | 22 | 2.00 | 5.00 | **4.2273** | .81251 |

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| TS | 22 | EHRs ensures that the system is protected against loss of user data in case of failure | 22 | 3.00 | 5.00 | **4.4091** | .73414 |
| TS | 23 | EHRs provides services in which the system responds to requests within a short and an acceptable time period | 22 | 3.00 | 5.00 | **4.4091** | .59033 |
| TS | 24 | EHRs ensures the protection of the data in transit from unauthorized access | 22 | 4.00 | 5.00 | **4.5909** | .50324 |
| TS | 25 | EHRs ensures that when a transaction is made, none of the parties involved in the transaction cannot repudiate, vs refute the validity of the transaction | 22 | 3.00 | 5.00 | **4.4091** | .66613 |
| TS | 26 | EHRs has the ability or power to meet the what the user needs done | 22 | 3.00 | 5.00 | **4.4091** | .66613 |
| TI | 27 | EHRs provides information which is valid and complete so as to be reliable | 22 | 3.00 | 5.00 | **4.4091** | .73414 |
| TI | 28 | EHRs provide adequate information for the purpose requested | 22 | 3.00 | 5.00 | **4.3636** | .65795 |
| TI | 29 | EHRs provide information which is relevant to the purpose requested | 22 | 2.00 | 5.00 | **4.1818** | .85280 |
| TI | 30 | EHRs provides The provision of information which is understandable | 22 | 3.00 | 5.00 | **4.5909** | .59033 |
| TI | 31 | EHRs provides an accurate information | 22 | 3.00 | 5.00 | **4.3636** | .65795 |
| TI | 32 | EHRs ensures that data are not collected, stored and shared without the user consent | 22 | 2.00 | 5.00 | **4.3182** | .83873 |
| TI | 33 | EHRs ensures that data are not lost while in transit and reach their destination in the original state | 22 | 3.00 | 5.00 | **4.5909** | .59033 |
| TI | 34 | EHRs provides information which is current and up-to-date | 22 | 1.00 | 2.00 | 1.5455 | .50965 |
| TI | 35 | EHRs offers guarantees for the identity and rights of the transacting parties | 22 | 1.00 | 2.00 | 1.2727 | .45584 |
| TI | 36 | EHRs helps the compliance with bodies directives and guidelines for online transactions | 22 | 1.00 | 2.00 | 1.1818 | .39477 |
| | | Valid N (list wise) | | | | | |

*Table (9): Trust Items Valued*

| | | Items | N | Min | Max | Mean | Std. Deviation |
|---|---|---|---|---|---|---|---|
| **TI** | 1 | EHRs ensures that the data collected will be solely used for the intended purpose | 22 | 3.00 | 5.00 | **4.1818** | .73266 |
| **TI** | 2 | EHRs ensures that stored data are protected from unauthorized manipulation/alteration | 22 | 3.00 | 5.00 | **4.2273** | .61193 |
| **TS** | 3 | EHRs provide responsiveness services in which effectively respond to the problem in question | 22 | 3.00 | 5.00 | **4.2273** | .75162 |
| **TS** | 4 | EHRs provides services which are delivered in a time and cost effective way | 22 | 3.00 | 5.00 | **4.2273** | .75162 |
| **TS** | 5 | EHRs provides services which are convenient and easy-to-use | 22 | 3.00 | 5.00 | **4.2273** | .61193 |
| **TS** | 6 | EHRs ensures that the system works properly and produces the correct output | 22 | 2.00 | 5.00 | **4.2273** | .81251 |

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **TS** | 7 | EHRs ensures that the system is protected against loss of user data in case of failure | 22 | 3.00 | 5.00 | **4.4091** | .73414 |
| **TS** | 8 | EHRs provides services in which the system responds to requests within a short and an acceptable time period | 22 | 3.00 | 5.00 | **4.4091** | .59033 |
| **TS** | 9 | EHRs ensures the protection of the data in transit from unauthorized access | 22 | 4.00 | 5.00 | **4.5909** | .50324 |
| **TS** | 10 | EHRs ensures that when a transaction is made, none of the parties involved in the transaction cannot repudiate, vs refute the validity of the transaction | 22 | 3.00 | 5.00 | **4.4091** | .66613 |
| **TS** | 11 | EHRs has the ability or power to meet the what the user needs done | 22 | 3.00 | 5.00 | **4.4091** | .66613 |
| **TI** | 12 | EHRs provides information which is valid and complete so as to be reliable | 22 | 3.00 | 5.00 | **4.4091** | .73414 |
| **TI** | 13 | EHRs provide adequate information for the purpose requested | 22 | 3.00 | 5.00 | **4.3636** | .65795 |
| **TI** | 14 | EHRs provide information which is relevant to the purpose requested | 22 | 2.00 | 5.00 | **4.1818** | .85280 |
| **TI** | 15 | EHRs provides The provision of information which is understandable | 22 | 3.00 | 5.00 | **4.5909** | .59033 |
| **TI** | 16 | EHRs provides an accurate information | 22 | 3.00 | 5.00 | **4.3636** | .65795 |
| **TI** | 17 | EHRs ensures that data are not collected, stored and shared without the user consent | 22 | 2.00 | 5.00 | **4.3182** | .83873 |
| **TS** | 18 | EHRs ensures that data are not lost while in transit and reach their destination in the original state | 22 | 3.00 | 5.00 | **4.5909** | .59033 |

**TS=trust system**
**TI=trust information**

**Reliability Test of Trust System**

The reliability test as shown in table (9), indicates that, 10 items of system trust are reliable at 70.2%, approximately which is upper than the minimum value of Cronbach 'Alfa 70% which considered reliable.

Table 8

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| 0.702 | 10 |

**Reliability Test of Trust Information**

As shown in Table (9) below, eight items of information trust are reliable at 72.6%, which is over than the minimum value of reliability test of 70%.

Table 9. Reliability statistic

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| 0.726 | 8 |

**Final questionnaires**

| | Item | Source |
|---|---|---|
| | **Performance Expectancy PE1** | [21],[15] |
| PE1 | I find EHRs useful in my daily life | [53] [54], [55], [11], |

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

| | | |
|---|---|---|
| PE2 | Using EHRs increases my chances of achieving things that are important to me. | |
| PE3 | Using EHRs helps me accomplish things more quickly. | |
| PE4 | Using EHRs increases my productivity. | |
| | **Effort Expectancy EE** | [21],[15] [53] [54], [55], [11], |
| EE1 | Learning how to use EHRs is easy for me. | |
| EE2 | My interaction with EHRs is clear and understandable | |
| EE3 | I find EHRs easy to use | |
| EE4 | It is easy for me to become skilful at using mobile Internet. | |
| | **Social Influence SI** | [21],[15] [53] [54], [55], [11], |
| SI1 | People who are important to me think that I should use mobile Internet | |
| SI2 | People who influence my behaviour think that I should use mobile Internet. | |
| SI3 | People whose opinions that I value prefer that I use mobile Internet. | |
| | **Facilitating Conditions** | [21],[15] [53] [54], [55], [11], |
| FC1 | I have the resources necessary to use mobile Internet. | |
| FC2 | I have the knowledge necessary to use mobile Internet | |
| FC3 | Mobile Internet is compatible with other technologies I use. | |
| FC4 | I can get help from others when I have difficulties using mobile Internet. | |
| | **Hedonic Motivation** | [15], |
| HM1 | Using EHRs is fun | |
| HM2 | Using EHRs is enjoyable | |
| HM3 | Using EHRs is very entertaining | |
| | **Habit** | [15], |
| HT1 | The use of EHRs has become a habit for me. | |
| HT2 | I am addicted to using mobile Internet. HT3. | |
| HT3 | I must use mobile Internet | |
| HT4 | Using EHRs has become natural to me. (dropped) | |
| | **Behavioural Intention** | [21],[15] [53] [54], [55], [11] |
| BI1 | I intend to continue using EHRs in the future | |
| BI2 | I will always try to use EHRs in my daily life. | |
| BI3 | I plan to continue to use EHRs frequently | |
| | **Use behaviour** | [21],[15] [53] [54], [55], [11] |
| U1 | The use of electronic health records usually for me | |
| U2 | I'm addicted to the use of electronic health records system | |
| U3 | Should the use of electronic medical records system. | |
| U4 | Use the system became normal for me. | |
| | **Trust information** | [50], [56],[42]–[48], [57], [58] |
| TI1 | EHRs ensures that the data collected will be solely used for the intended purpose | |
| TI2 | EHRs ensures that stored data are protected from unauthorized manipulation/alteration | |
| TI3 | EHRs provides information which is valid and complete so as to be reliable | |

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

| | | |
|---|---|---|
| TI4 | EHRs provide adequate information for the purpose requested | |
| TI5 | EHRs provide information which is relevant to the purpose requested | |
| TI6 | EHRs provides The provision of information which is understandable | |
| TI7 | EHRs provides an accurate information | |
| TI8 | EHRs ensures that data are not collected, stored and shared without the user consent | |
| | **Trust system** | [50], [56],[42]–[48], [57], [58] |
| TS1 | EHRs provide responsiveness services in which effectively respond to the problem in question | |
| TS2 | EHRs provides services which are delivered in a time and cost effective way | |
| TS3 | EHRs provides services which are convenient and easy-to-use | |
| TS4 | EHRs ensures that the system works properly and produces the correct output | |
| TS5 | EHRs ensures that the system is protected against loss of user data in case of failure | |
| TS6 | EHRs provides services in which the system responds to requests within a short and an acceptable time period | |
| TS7 | EHRs ensures the protection of the data in transit from unauthorized access | |
| TS8 | EHRs ensures that when a transaction is made, none of the parties involved in the transaction cannot repudiate, vs refute the validity of the transaction | |
| TS9 | EHRs has the ability or power to meet the what the user needs done | |
| TS10 | EHRs ensures that data are not lost while in transit and reach their destination in the original state | |

## 6. LIMITATIONS AND FUTURE RESEARCH

This study is in its first hypothetical idea, in which a beginner model is proposed based on the literature review and conceptual thought. **Limitations were studied only two hospitals in Jordan and the sample size was small where 22 respondent.**

The following step is the application and validation of the model to an arrangement of healthcare professionals, in order to test the and directly assess its explanatory and predictive power. Future studies may evaluate other relationships that were not foreseen in this model and that will improve the ability to explain the dependent variables. Therefore, this paper opens up other selections for future research Refinement of the constructs and measures is one of the possibilities. An additional option is the examination of more complex relationships between the Independent and dependent variables of the model. Testing this model with other e-health technologies, and in other countries that may be more or less developed than Jordan in e-health use are options that can also bring benefits.

## CONCLUSIONS

Understanding the acceptance and use of EHR system of health care professionals should bring strong benefits for the future sustainability of the Healthcare System, which will enjoy more efficient use of resources. Thus, the goal of this study is to identify a set of determinants of adoption of EHRs by healthcare professionals. To realize this goal, we suggest a research model based on UTAUT2, adding trust factors. We examine all factors that affect EHRs acceptance to know which factors appropriate with this field. We also expect this study to provide a theoretical

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

framework that is a foundation and a starting point for future research on the adoption of EHRs by healthcare professionals .

## ACKNOWLEDGEMENT

This paper is part of Doctor of Philosophy (PhD) work in UTeM and partially funded under research grant scheme PJP/2015/FTMK ( 7 ) /S01448

## REFERENCES

[1] M. K. Abd Ghani and M. M. Jaber, "Willingness to Adopt Telemedicine in Major Iraqi Hospitals: A Pilot Study," *Int. J. Telemed. Appl.*, vol. 2015, no. 3, 2015.

[2] S. R. Rao, C. M. Desroches, K. Donelan, E. G. Campbell, P. D. Miralles, and A. K. Jha, "Electronic health records in small physician practices: availability, use, and perceived benefits.," *J. Am. Med. Inform. Assoc.*, vol. 18, no. 3, pp. 271–5, May 2011.

[3] M. N. Herian, N. C. Shank, and T. L. Abdel-Monem, "Trust in government and support for governmental regulation: the case of electronic health records.," *Health Expect.*, vol. 17, no. 6, pp. 784–94, Dec. 2014.

[4] T. W. Guilbert, B. Arndt, J. Temte, A. Adams, W. Buckingham, A. Tandias, C. Tomasallo, H. a Anderson, and L. P. Hanrahan, "The theory and application of UW ehealth-PHINEX, a clinical electronic health record-public health information exchange.," *WMJ*, vol. 111, no. 3, pp. 124–33, Jun. 2012.

[5] D. W. Bates, "Physicians and ambulatory electronic health records," *Health Aff.*, vol. 24, no. 5, pp. 1180–1189, 2005.

[6] H. Hyppönen, J. Reponen, T. Lääveri, and J. Kaipio, "User experiences with different regional health information exchange systems in Finland.," *Int. J. Med. Inform.*, vol. 83, no. 1, pp. 1–18, Jan. 2014.

[7] S. O. Popov and J. Jacob, "Privacy in Electronic Health Record Systems – Consumer ' s perspective."

[8] R. Gajanayake, R. Iannella, and T. Sahama, "Privacy by information accountability for e-health systems," *2011 6th Int. Conf. Ind. Inf. Syst.*, pp. 49–53, Aug. 2011.

[9] D. B. A. S. J. Mbbs and M. Administration, "A systematic literature review of Security , Privacy and Confidentiality of patient information in Electronic Health Information Systems," no. 1, pp. 25–31, 2013.

[10] Q. Gan and Q. Cao, "Adoption of Electronic Health Record System: Multiple Theoretical Perspectives," *2014 47th Hawaii Int. Conf. Syst. Sci.*, pp. 2716–2724, Jan. 2014.

[11] M.-P. Gagnon, E. K. Ghandour, P. K. Talla, D. Simonyan, G. Godin, M. Labrecque, M. Ouimet, and M. Rousseau, "Electronic health record acceptance by physicians: testing an integrated theoretical model.," *J. Biomed. Inform.*, vol. 48, pp. 17–27, Apr. 2014.

[12] A. A. Taiwo and A. G. Downe, "THE THEORY OF USER ACCEPTANCE AND USE OF TECHNOLOGY ( UTAUT ): A META-ANALYTIC REVIEW OF EMPIRICAL FINDINGS," vol. 49, no. 1, 2013.

[13] A. Hennington and B. D. Janz, "Information Systems and Healthcare XVI : Physician Adoption of Electronic Medical Records : Applying the UTAUT Model in a Healthcare Context RECORDS : APPLYING THE UTAUT MODEL IN A," vol. 19, 2007.

[14] N. Phichitchaisopa and T. Naenna, "Original article : FACTORS AFFECTING THE ADOPTION OF HEALTHCARE," pp. 413–436, 2013.

[15] V. Venkatesh, "C ONSUMER A CCEPTANCE AND U SE OF I NFORMATION T ECHNOLOGY : E XTENDING THE U NIFIED T HEORY," vol. 36, no. 1, pp. 157–178, 2012.

[16] V. P. Aggelidis and P. D. Chatzoglou, "Using a modified technology acceptance model in hospitals.," *Int. J. Med. Inform.*, vol. 78, no. 2, pp. 115–26, Feb. 2009.

[17] P. Hsieh, "Physician Acceptance Behavior of the Electronic Medical Records Exchange : An Extended Decomposed Theory of Planned Behavior MEDICAL RECORDS EXCHANGE : AN EXTENDED," 2013.

[18] J. Karuri, P. Waiganjo, and A. Manya, "Adoption of Health Information Systems by Health Workers in Developing Countries ± Contextualizing UTAUT," pp. 1–8, 2013.

[19] M. Williams, "IS UTAUT REALLY USED OR JUST CITED FOR THE SAKE

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

OF IT ? A SYSTEMATIC REVIEW OF CITATIONS OF UTAUT ' s ORIGINATING ARTICLE," 2011.

[20] M. D. MB.Alazzam, Dr.Abdul Samad Sibghatullah, Abd. Samad Hasan Basari, "Review of Studies With Utaut As Conceptual Framework," *Eur. Sci. J.*, vol. 10, no. 3, pp. 249–258, 2015.

[21] M. G. Morris, M. Hall, G. B. Davis, F. D. Davis, and S. M. Walton, "U SER A CCEPTANCE OF I NFORMATION T ECHNOLOGY : T OWARD A U NIFIED V IEW 1," vol. 27, no. 3, pp. 425–478, 2003.

[22] M. J. Wills, "EXAMINING HEALTHCARE PROFESSIONALS ' ACCEPTANCE OF ELECTRONIC MEDICAL RECORDS USING UTAUT," vol. IX, no. 2, pp. 396–401, 2008.

[23] M. Kang, B. T. Liew, H. Lim, J. Jang, and S. Lee, "Emerging Issues in Smart Learning," pp. 209–216, 2015.

[24] M. Technologies, S. D. Impact, and M. I. Usage, "Mobile Technologies and Services Development Impact on Mobile Internet Usage in Latvia « Mobile Technologies and Services Development Impact on Mobile Internet Usage in Mobile Technologies and Services Development Impact on Mobile Internet Usage in Latvia," 2013.

[25] A. Raman and Y. Don, "Preservice Teachers' Acceptance of Learning Management Software: An Application of the UTAUT2 Model," *Int. Educ. Stud.*, vol. 6, no. 7, Jun. 2013.

[26] W.-S. Jian, S. Syed-Abdul, S. P. Sood, P. Lee, M.-H. Hsu, C.-H. Ho, Y.-C. Li, and H.-C. Wen, "Factors influencing consumer adoption of USB-based Personal Health Records in Taiwan.," *BMC Health Serv. Res.*, vol. 12, no. 1, p. 277, Jan. 2012.

[27] K. Steininger, B. Stiglbauer, B. Baumgartner, and B. Engleder, "Factors Explaining Physicians' Acceptance of Electronic Health Records," *2014 47th Hawaii Int. Conf. Syst. Sci.*, pp. 2768–2777, Jan. 2014.

[28] M. M. Jaber, M. Khanapi, A. Ghani, and N. S. Herman, "a Review of Adoption of Telemedicine in Middle East Countries : Toward Building Iraqi Telemedicine Framework," *Int. Symp. Res. Innov. Sustain. 2014 (ISoRIS '14)*, no. October, pp. 1795–1800, 2014.

[29] R. I. Ababaneh, "The role of organizational culture on practising quality improvement in Jordanian public hospitals," *Leadersh. Heal. Serv.*, vol. 23, no. 3, pp. 244–259, 2010.

[30] M. E. Morton and S. Wiedenbeck, "EHR acceptance factors in ambulatory care: a survey of physician perceptions.," *Perspect. Health Inf. Manag.*, vol. 7, p. 1c, Jan. 2010.

[31] M. M. Nakamura, T. G. Ferris, C. M. DesRoches, and A. K. Jha, "Electronic health record adoption by children's hospitals in the United States.," *Arch. Pediatr. Adolesc. Med.*, vol. 164, no. 12, pp. 1145–51, Dec. 2010.

[32] M. V Bloom and M. K. Huntington, "Faculty , Resident , and Clinic Staff ' s Evaluation of the Effects of EHR Implementation," no. September, pp. 562–566, 2010.

[33] P. H. Song, A. S. McAlearney, J. Robbins, and J. S. McCullough, "Exploring the business case for ambulatory electronic health record system adoption.," *J. Healthc. Manag.*, vol. 56, no. 3, pp. 169–80; discussion 181–2.

[34] B. A. Y. Al-nassar, M. S. Abdullah, W. Rozaini, and S. Osman, "Healthcare Professionals use Electronic Medical Records System ( EMRs ) in Jordan Hospitals," vol. 11, no. 8, pp. 112–118, 2011.

[35] S. S. Feldman and T. a Horan, "Collaboration in electronic medical evidence development: a case study of the Social Security Administration's MEGAHIT System.," *Int. J. Med. Inform.*, vol. 80, no. 8, pp. e127–40, Aug. 2011.

[36] S. Siddiqi, R. Elasady, I. Khorshid, T. Fortune, a Leotsakos, M. Letaief, S. Qsoos, R. Aman, a Mandhari, a Sahel, M. El-Tehewy, and a Abdellatif, "Patient Safety Friendly Hospital Initiative: from evidence to action in seven developing country hospitals.," *Int. J. Qual. Health Care*, vol. 24, no. 2, pp. 144–51, Apr. 2012.

[37] M. Zineddine and I. Privacy, "AUTOMATED HEALTHCARE INFORMATION PRIVACY AND SECURITY : THE UAE CONTEXT," vol. 2012, pp. 311–318, 2012.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

[38] D. Box and D. Pottas, "Improving Information Security Behaviour in the Healthcare Context," *Procedia Technol.*, vol. 9, pp. 1093–1103, Jan. 2013.

[39] J. L. Fernández-Alemán, I. C. Señor, P. Á. O. Lozoya, and A. Toval, "Security and privacy in electronic health records: a systematic literature review.," *J. Biomed. Inform.*, vol. 46, no. 3, pp. 541–62, Jun. 2013.

[40] M. Khalifa, "Barriers to Health Information Systems and Electronic Medical Records Implementation. A Field Study of Saudi Arabian Hospitals," *Procedia Comput. Sci.*, vol. 21, pp. 335–342, Jan. 2013.

[41] A. Al-adwan and H. Berger, "Understanding Physicians ' Adoption of EMR : An Extended Technology Acceptance Model the Case of : Jordan Understanding Physicians ' Adoption of EMR : An Extended Technology Acceptance Model the Case of Jordan," 2013.

[42] M. Horst, M. Kuttschreuter, and J. M. Gutteling, "Perceived usefulness, personal experiences, risk perception and trust as determinants of adoption of e-government services in The Netherlands," *Comput. Human Behav.*, vol. 23, pp. 1838–1852, 2007.

[43] L. Carter and F. Bélanger, "The utilization of e-government services: Citizen trust, innovation and acceptance factors," *Inf. Syst. J.*, vol. 15, pp. 5–25, 2005.

[44] L. Carter and V. Weerakkody, "E-government adoption: A cultural comparison," *Inf. Syst. Front.*, vol. 10, no. 4, pp. 473–482, 2008.

[45] K. Chopra and W. a. Wallace, "Trust in electronic environments," *36th Annu. Hawaii Int. Conf. Syst. Sci. 2003. Proc.*, vol. 00, no. C, pp. 1–10, 2003.

[46] D. Gilbert, P. Balestrini, and D. Littleboy, "Barriers and benefits in the adoption of e-government," *Int. J. Public Sect. Manag.*, vol. 17, no. 4, pp. 286–301, 2004.

[47] D. J. Kim, Y. I. Song, S. B. Braynov, and H. R. Rao, "A multidimensional trust formation model in B-to-C e-commerce: A conceptual framework and content analyses of academia/practitioner perspectives," *Decis. Support Syst.*, vol. 40, pp. 143–165, 2005.

[48] S. Y. Hung, C. M. Chang, and T. J. Yu, "Determinants of user acceptance of the e-Government services: The case of online tax filing and payment system," *Gov. Inf. Q.*, vol. 23, pp. 97–122, 2006.

[49] E. W. Welch, C. C. Hinnant, and M. J. Moon, "Linking citizen satisfaction with e-government and trust in government," *J. Public Adm. Res. Theory*, vol. 15, no. 3, pp. 371–391, 2005.

[50] P. Papadopoulou and M. Nikolaidou, "What Is Trust in E-Government ? A Proposed Typology," pp. 1–10, 2010.

[51] U. Sekaran, *Research Method for business A Skill building Approach*, 4ed ed. 2003.

[52] J. F. Hari, W. C. Black, B. J. Babin, and R. E. Anderson, *Multivariate Data Analaysis*, Seventh. Pearson Prentice Hall, 2010.

[53] L. C. Schaupp, L. Carter, and M. E. McBride, "E-file adoption: A study of U.S. taxpayers' intentions," *Comput. Human Behav.*, vol. 26, no. 4, pp. 636–644, Jul. 2010.

[54] P. Ifinedo, "Technology Acceptance by Health Professionals in Canada: An Analysis with a Modified UTAUT Model," *2012 45th Hawaii Int. Conf. Syst. Sci.*, pp. 2937–2946, Jan. 2012.

[55] J. F. Cohen, J. Bancilhon, and M. Jones, "South African physicians ' acceptance of e-prescribing technol- ogy : an empirical test of a modified UTAUT model," no. 50, pp. 43–54, 2013.

[56] M. Barua, "E-Governance Adoption in Government Organization of India," *Int. J. Manag. Public Sect. Inf. Commun. Technol.*, vol. 3, no. 1, pp. 1–20, 2012.

[57] H. Alsaghier, M. Ford, A. Nguyen, and R. Hexel, "Conceptualising Citizen ' s Trust in e-Government : Application of Q Methodology," vol. 7, no. 4, pp. 295–310, 2009.

[58] M. Alomari, "Discovering citizens reaction toward e-government: factors in e-government adoption," *JISTEM-Journal Inf. Syst. ...*, vol. 11, no. 1, pp. 5–20, 2014.