An-Najah National University
Faculty of Graduate Studies

Factors Affecting the Acceptance of E-Health System - A Case Study of Nablus Governorate Hospitals

By
Mai Sameer Qutob

Supervisors
Dr. Baker Abdalhaq

This Thesis is Submitted in Partial Fulfillment of the Requirements for the Degree of Masters of Engineering Management, Faculty of Graduate Studies at An-Najah National University, Nablus, Palestine.

2017

Factors Affecting the Acceptance of E-Health System - A Case Study of Nablus Governorate Hospitals

By
Mai Sameer Qutob

This Thesis was defended successfully on 6/12/2017 and approved by

Defense Committee Member	**Signatures**
1. Dr. Baker Abdalhaq\ Supervisor	**...….....**
2. Dr. Ahmad Ewais \ External Examiner	**...….....……**
3. Dr. Yahya Saleh \ Internal Examiner	**….....……**

Dedication

To the gentleman Mr. Nomair Isbaih, who raised me to believe in myself, to be a better woman, without him I would have never inspired to start but also complete this work

To my dear father a man no like other for supporting me all the way .

To my mother a strong and gentle soul who taught me to trust in Allah, believe in hard work. and that so much could be done with little

To anyone who has shown me friendship and kindness during my field travels

Thank you for every thing

Acknowledgement

First and foremost, I am thankful to Allah for granting me the strength, perseverance and steadfastness to carry on and to accomplish this work.

I am extremely grateful to my supervisor, Dr. Baker Abdalhaq, for holding me to his high academic standards and for his valuable guidance, advice and sincere support throughout the journey of my research.

I would like to express my deepest gratitude to my father and mother for their endless support and confidence throughout my life.

Big thanks to my friends especially Jumana Jaghub, Nomair Isbaih, Fareed Al-sayeed and Liana Nabulsi, for providing me with unfailing support and continuous encouragement throughout my years of study and through the process of researching and writing this thesis.

Finally, thanks to all hospitals and specialists who provided me with valuable information and figures. Without their passionate participation and input, the validation survey could not have been successfully conducted.

Thank you all,

الإقرار

أنا الموقعة أدناه مقدمة الرسالة التي تحمل العنوان:

Factors Affecting the Acceptance of E-Health System - A Case Study of Nablus Governorate Hospitals

العوامل المؤثرة على قبول نظام الصحة الإلكترونية دراسة حالة لمستشفيات محافظة نابلس

أقر بأن ما اشتملت عليه هذه الرسالة إنما هو نتاج جهدي الخاص، باستثناء ما تمت الإشارة إليه حيث ما أن هذه الرسالة كاملة، أو أي جزء منها لم يقدم من قبل لنيل أي درجة أو لقب علمي أو بحث لدى أي مؤسسة تعليمية أو بحثية أخرى.

Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's name: **اسم الطالبة:**

Signature: **التوقيع:**

Date: **التاريخ:**

List of Abbreviation

E-Health	Electronic Health
TAM	Technology Acceptance Model
IT	Information Technology
ICT	Information and Communication Technologies
IS	Information System
HIS	Hospital Information System
H	Hypothesis
SPSS	Statistical Package for the Social Sciences
Comm.	Communication
PU	Perceived Usefulness
PEOU	Perceived Ease of Use
ATT	Attitude
E- prescription	Electronic Prescription
INT	Intention
WHO	World Health Organization
UNSCO	United Nations Special Coordinator Office
HIT	Health Information Technology
HIMS	Healthcare Information Management System
PR	Perceived Risk
Std. Deviation	Standard Deviation
N	Numbers
Sig.	Significant
LSD test	Least Significant Difference
SPSS	Statistical Package for the Social Sciences
ANOVA	Analysis of Variance

Table of Contents

List of Tables

List of Figures

List of Appendices

Glossary of Key Terms

Term	Definition
Acceptance	The demonstrable willingness within a user group to employ information technology for the tasks it is designed to support (Dillon & Morris, 1996).
Intention	A measure of the strength of one's intention to perform a specified behavior (Davis et al., 1989).
Factors	Elements contributing to a particular result or situation (Davis et al., 1989).
Information and Communications Technology (ICT)	ICT is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems, as well as the a variety of services and applications (Fromm et al., 2009).
Healthcare ICT	Healthcare information and communication technology is used to describe a broad concept of technologies which allow individuals to conduct various healthcare-related actions, for example, to collect information, access stored data, communicate, and interact with distant services without limitation in time and space (Ammenwerth et al,. 2003)
Health Informatics	A combination of computer science, information science, and health science (Aggelidis & Chatzoglou, 2009).
User	End-user of a specific device, system or service. The main users of healthcare ICT are: a) healthcare professionals who work with healthcare ICT applications in hospitals, health centers and other healthcare institutions, b) patients, c) all citizens (regarding the e-Health services), and d) other supportive parties (e.g., parents, family, social care workers) (Fromm et al., 2009).
Healthcare Professionals	A personnel responsible for medical and care-giving activities in hospitals. Professionals include individuals with different areas of expertise: clinicians, physicians, nurses, radiologists, pharmacists, laboratory technicians, radiographers, etc. (Ammenwerth et al., 2003).
Attitude	Positive or negative evaluation on specific thing or individual. Attitude is influenced by beliefs about the consequences (Tan & Teo, 2000; Luo et al., 1999).
Statistical Package for the Social Sciences software (SPSS)	SPSS is a computer program used for statistical analysis. SPSS can provide various, statistics and empower researchers to achieve their objectives (DeCoster, 2004).

Factors Affecting the Acceptance of E-Health System
A Case Study of Nablus Governorate Hospitals

By
Mai Sameer Qutob
Supervisors
Dr. Baker Abdalhaq

Abstract

This research aims to study the factors influencing medical professionals' acceptance and usage of e-Health technology in State of Palestine hospitals and to introduce an e-Health framework that can be adopted by the Palestinian hospitals in order to utilize technology effectively in their operations. A longitudinal case study was undertaken for three hospitals in Nablus governorate. Which are Rafidia Surgical Hospital, Al-Najah, and specialized Arab hospitals working in Nablus.

The research framework which based on Technology Acceptance Model (TAM) was conceptualized via reviewing related literature and experts' opinion in the design process. TAM, which contains perceived usefulness, perceived ease of use, attitude towards usage, and usage intentions, is extended with external factors, which are system characteristic, training, fear of accountability, output quality, culture and perceived risk).

The research utilized both qualitative and quantitative research methods to answer the research questions and to test hypotheses. Qualitative data were collected via in depth semi-structured interviews with IT specialists and system users in a targeted area in order to get a better

understanding to e-Health system status, benefits, challenges and obstacles. Furthermore, Quantitative data were related to the factors influencing E-Health acceptance collected via a survey which was distributed to a random sample (n=300) of health professionals at hospitals.

The results of the literature review, the qualitative exploratory study, the quantitative pilot, and the quantitative final study formed the framework. The analysis of collected data indicated that perceived ease of use, perceived usefulness, perceived risk, and output quality are the most significant factors influencing E-Health adoption by Palestinian hospitals. Additionally, perceived risk, system characteristic, and fear of accountability, are influencing e-Health innovation adoption in less degree.

Based on the research findings, Palestinian health institutions should work on formulating new strategies, enhancing operational processes, developing E-Health infrastructure, introducing services with high quality, and coordinating with other entities such as, ICT companies, offices transfer software programs; that would be helpful in achieving medical care employees' trust in order to spreading E-Health technology among Palestinian society.

Chapter One

Introduction

Chapter One
Introduction

This chapter introduces a general background of the research title, clarifying statement of the problem, importance of the research, research objectives, and research questions. In addition, it presents the research hypotheses, and the structure of the thesis.

1.1 Background

Clinics, hospitals, community health sites and primary health care centers are the healthcare facilities (WHO, 2012). Healthcare is a sector full of vast and various information and knowledge relating to health issues, nutrition, disease prevention, disease management and cure through medication. This information is continuously generated and resides in the pivots of the health care system, which are the individual, the physician, and the community.

The health domain is experiencing a significant numerous of internal, but also external pressures due to increasing population and demand for better health services. The progress in information and communication technologies (ICT) and medicine are resulting in new methods, manners, and opportunities to support or even enable new pattern of health care services (Anker et al., 2011).

ICTs is the solution for poor healthcare outcomes (Li et al., 2013). It plays an essential role in supporting daily life in today's digital society; it has used everywhere now and helping to delivering more efficient,

dynamic, and better healthcare services (Anja, Heiko, & Ulrich, 2014). It also helps corporation and institutions to increase productivity and create attractive products to be sold on the world market, additional to its greatest impact on administration functions, such as reducing health care cost, decreasing paperwork and workload of healthcare professionals, increasing administrative efficiencies and expanding access to affordable care. It has also shown effectiveness in preventing medical errors by enforcing clinical guidelines and protocols.

Using technology in health domain allows medical practitioners and healthcare specialists to diagnose and provide advice for the treatment of patients at a distance using ICT technologies. It can also be accessed by using the Internet, up-to-date medical data or gain expert advice from other medical professionals and therefore, obtain more accurate solutions for patients' diagnosis and treatment (Holden & Karsh, 2010). Additionally, with the sophistication in modern telecommunications also in information processing capability and miniaturization of health diagnostic equipment, it becomes possible to deliver more immediate, efficient and effective heath care services to the masses (Street, 2004).

E-Health is one of the outputs of the technological development in the field of ICT, which offers many opportunities for enhancing the quality of medical process by developing the quality management system in the field of e-Health that will reflect positively on practitioners (Holden, 2010).

According to European Commission (2011), the different e-Health applications have been used across countries corresponding to their health

needs and priorities. The application has different purposes in developing and developed countries. For developing countries, the main goals are to provide & improve access to medical services for populations living in rural and remote areas, also to more efficient in utilizing limited healthcare resources. While in developed countries, the major goals are to minimize healthcare budgets and to find solutions for an aging population. World Health Report 2006 “Working together for Health" mention that the most acute needs for e-Health applications are in developing world (WHO, 2006).

According to Schaper & Pervan (2007), e-Health depends primarily on the user's willingness to employ & utilize the computer in the health process. Therefore, understanding the individuals’ willingness to accept and utilize computer considered to be one of the most challenging issues in information systems research, Davis (1989) agreed with them and mention, if this can be understood, any institution would be able to explain, predict, enhance, and raise up user acceptance of any technology.

Despite high interest in e-Health technology, but the acceptance rates still not high enough for healthcare systems to experience the maximal benefits. E-Health has to offer and users' resistance to new technologies innovations is cited as a major barrier to advancement (Li et al., 2013). Also, the implementing and embedding new technologies of any kind involves complex processes of change at the micro level for medical staff also for patients and at the level for healthcare organizations (Mair et al., 2012).

1.2 Statement of the Problem

Many public and private health services providers suffer from Poor documentation, losing or damaging data, lack accessing of data, ineffective dissemination of-or inaccessible to information and reliance on human memory for the retrieval of data; all these are barriers that impede delivering high-quality healthcare services. Additionally, many of man-hours are wasted by personnel moving from department to department in search of-or for purposes of delivering the information. Hence, to achieve effectiveness in delivering health care services ICTs can thus be adopted because; they have potential to bring about extreme changes within the healthcare sector.

Several researchers (e.g., Chaudhry et al., 2006; Häyrinen et al., 2008; Goldschmidt, 2005) have emphasized the need for a research topic in implementing ICT in the health sector in order to realize the practical benefits of, challenges for, and factors effect on technology adoption (Schaper & Pervan, 2007).

Sequist et al., (2008) noted that Health Information Technology (HIT) has the potential to improve the quality of care, patient safety and reduce the cost of care services. Despite that, the system is not widely available and even if available is not properly utilized, Bennani., (2008) agreed with them and mention that the adoption of such IT in the healthcare industry is still very slow compared with other industries.

Strategies for the successful management of e-Health system implementation and development should include engaging the healthcare professionals, also should provide strong organizational support for them before and during implementation activities. These factors could eliminate major resistance and mitigate negative attitudes frequently reported, and at the same time increase the level of acceptance of e-Health by healthcare workers (Khalifa & Alswailem, 2015).

Chau & Hu (2002) noted that due to the newness of e-Health services, particularly in the area of developing world, there is a limitation in previous academic research. Where the majority of the research published are relate to developed world (Currie, Philip & Roberts, 2015).

This research focuses on a key gap in the literature regarding the use of technology acceptance models in health sector from the medical professionals' perspective in Palestinian hospitals on one hand and, identifying factors affecting the acceptance on the other hand. Identifying the factors that are either internal or external is a necessary step for successful e-Health services implementation.

1.3 Importance of the Study

Motivations that encourage studying this topic are:

- The use of e-Health Technology in Palestine is not mature yet. It still suffers from lack of popularity, so it deserves to review for better and clear understanding of this technology.

- Until recently, no research has investigated factor affecting of e-Health adoption in Palestinian hospitals. Hence, this research is an attempt to fill this gap by addressing these factors and its influence on e-Health adoption in Palestine.

- It will enrich the scientific knowledge with e-Health science, which is a relatively a new topic, also the studies in this area are still limited.

- E-Health technology is an important tool for hospital development towards improving the community, testing of these factors may result a recommendation for e-Health strategist and providers in the country, where the initiative might not be successful if such factors were not taken into account.

1.4 Research Questions

The main question is:

What are the factors that influence the acceptance and use of e-Health system by medical professionals in Palestinian private and public hospitals?

The sup-questions are:

1. Which factors have strong or weak effect on acceptance?

2. What changes are required to improve e-Health environment?

1.5 Research Objectives

1. To determine the factors that influence the adoption of e-Health in the Palestinian hospitals.
2. To determine which of these factors have the greatest impact on the adoption of e-Health technology.
3. To find the correlations between factors influencing the adoption of e-Health in the Palestinian hospitals.
4. To introduce e-Health adoption framework in Palestine.

1.6 Research Hypotheses

This research aims to test the following hypotheses:

1. System characteristic has direct and positive effect on perceived risk of e-Health system.
2. Employees training has direct and positive effect on perceived risk of e-Health system.
3. Fear of accountability has direct and positive effect on perceived risk of e-Health system.
4. System characteristic has direct and positive effect on perceived ease of use of e-Health system.
5. Employees training has direct and positive effect on perceived ease of use of e-Health system.

6. Fear of accountability has direct and positive effect on perceived ease of use of e-Health system.

7. System characteristic has direct and positive effect on perceived usefulness of e-Health system.

8. Employees training has direct and positive effect on perceived usefulness of e-Health system.

9. Fear of accountability has direct and positive effect on perceived usefulness of e-Health system.

10. Perceived risk has direct and positive effect on perceived usefulness of e-Health system.

11. Perceived risk has direct and positive effect on perceived ease of use of e-Health system.

12. Output quality has a positive influence on intention to use e-Health system.

13. Culture has a positive influence on intention to use e-Health system

1.7 Thesis Structure

The reader will find Five Chapters in this thesis. The first chapter introduces the thesis subject and its objectives. The second chapter is the literature review that contains six parts (E-Health overview, background, E-Health Discussion, ICT in health sector, technology adoption in health care, related studies).

The third chapter is research methodology, which explains this research methodology along with the tools used for data collection. The fourth chapter presents the data analysis and result. Finally, the last chapter provided the result discussion, conclusions and recommendations, and some suggestions for future research. See Figure (1-1): Thesis structure

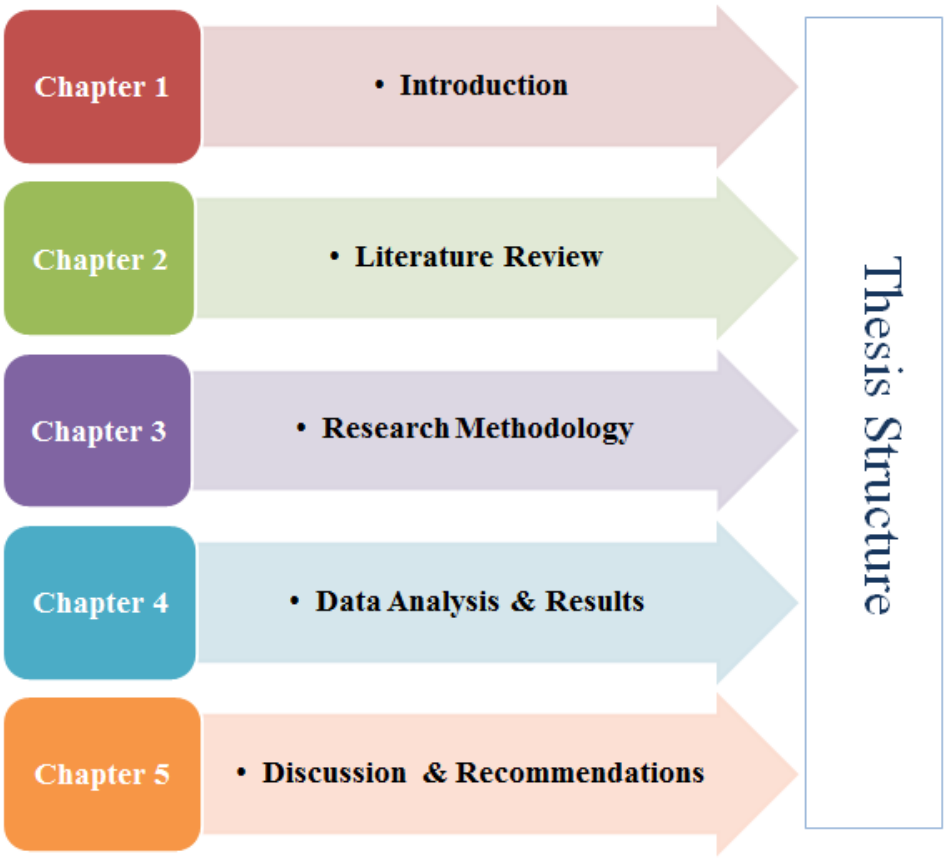

Figure (1.1): Thesis Structure

Chapter Two
Literature Review

Chapter Two
Literature Review

This chapter is divided into two parts, the first one discuss e-Health and ICT terminologies, while the second part of this chapter discusses the previous scientific studies related to e-Health adoption, user acceptance model, factors influencing e-Health adoption Palestine.

2.1 Background

Information and Communication Technology (ICT) is one of the driving forces of globalization, which drive the nation for developing. ICT applications enter the daily lives of human and have rapidly changed our economic and social life; this is because the technology has given us multiple ways to accomplish the tasks better and faster, and has had a significant effect on the way organizations managed its services.

The advent of ICT around the world is gaining life and nation's opportunity to achieve sophistication in all aspects of society, including health care (Idowu, et al., 2003).

ICTs have great potential to improve medical sector in both the developed and developing world, by enhancing access to medical information and making health services more efficient; They can also contribute to improve the output of health services, and reduce services cost (WHO, 2012). Also, enriching workflow, simplifying healthcare operations, and reaching health goals in a more effective manner (Viitanen, 2009).

World population now exceeds seven billion, whereas more than 5.5 billion reside in the developing countries (UNDP, 2016). The increasing number of population requires finding ways to enhance and improve the quality of medical care delivery systems for all health institutions. ICT is the vehicle with the potential to enhance the health care services as well as the competence of the healthcare worker and institutions in both the public and private sectors worldwide (Idowu et al., 2003).

A survey results provided by WHO region, World Bank income group, and globally – showed that e-Health systems are being increasingly adopted within the health sector in higher income countries, and the emerging economies such as Brazil, China, and India for instance, are also beginning to use e-Health systems in their health care, whereas low-income countries still struggling to initiate e-Health systems (WHO, 2012).

According to Khalifa & Alswailem (2015), the modern e-Health systems are comprehensive, integrated and specialized information system are designed to manage the administrative, financial and clinical aspects of hospitals and healthcare facilities. They are considered one of the most important focal points on which the delivery of healthcare between hospitals and different types of medical institutions.

Hospital Information Systems have the potential to improve the health of individuals and the performance of healthcare providers, which led to improving quality, expense savings, and greater engagement by patients in their own health care. Despite evidence of these benefits,

hospitals utilization of e-Health systems is still low. The response of healthcare professionals to the use of Hospital Information Systems is an important research topic that can explain the success or failure of any e-Health development and implementation project (Khalifa & Alswailem, 2015).

Although research often focuses on systems design and implementation, but this not enough on how users react to already implemented IT systems. The fit between IT and the hospital work system will lead intended users to accept or reject the system and to incorporate it into their work (Holden & Karsh, 2010).

2.2 E-Health Discussion

The world population is growing quickly, while the medical care services delivery is not good enough to cater for the populace. Therefore, a need for bringing new ways to improve the healthcare delivery is created in order to allow people to have access to healthcare easily and timely, hence implementing e-Health projects are the modern way to enrich the sector of healthcare services.

E-Health is a new global topic (Pagliari et al., 2005). It was discussed at the Nations World Summit on the Information Society in December 2003, which was held in Geneva-Tunis 2003. The summit of (WSIS) asserts commitments of nations to improving access to the world's health knowledge and telemedicine services in order to aid improving the quality of life (International Telecommunication Union, 2012).

The Nations World Summit pointed that e-Health is one of the significant ICT applications, and stated the following: “Promoting collaborative efforts of health stockholders, governments, planners, health practitioners’, and other agencies along with the participation of international organizations for creating a reliable, timely, high quality and affordable healthcare and health information systems and for promoting continuous medical training, education, and research through the use of ICTs, and encourage the acceptance & utility of ICTs to improve and extend healthcare and health information systems (International telecommunication union, 2012).

The all-embracing mandate of the United Nations agencies aims to show the way and assist countries in bringing about peace, growth, and prosperity in the world through development. WHO which is one of the United Nations agency, published in 2005 a general report on the subject of e-Health, in the interests of drawing the attention of decision-makers to the need for the rapid development of strategies in this area (Healy, 2008).

The e-Health innovation is one component in the progressing process since there is no health without development, no development without health. Hence, it should take the concern of any local institution and all United Nations agencies.

2.2.1 Introduction to E-Health

The prefix "e-", in the term E-Health is standing for "electronic", is similarly used in numerous other applications such as e-human resource, e-

banking, e-commerce, e-learning, e-school, e-governance and e-transport. etc., to convey the notion of digital data (as opposed to traditional data such as, manual medical report, paper medical records, electrocardiogram printouts and x-ray film). Without digitization, there would be no automatic processing and no instantaneous exchange via the network (Healy, 2008).

Eysenbach in 2001 wrote, "e" in e-Health does not only stand for "electronic," but the definition actually encompasses a number of other “e’s,” which together, perhaps best characterize what e-Health is all about, this 10 e's in "e-Health" are: Efficiency, Enhancing Quality, Evidence-Based, Empowerment, Encouragement, Education, Enabling, Extending, Ethics, Equity (Eysenbach, 2001).

The term Health used broadly and refers to a state of complete physical, mental and social well-being and not merely the absence of illness, disease or infirmity (WHO, 2004). The scope of health has two major facets, the first is public health: which is the responsibility of states and is geared towards preventing and responding to disease in populations and the second is health care: which is geared towards individual patients and the treatment of disease (Healy, 2008).

The health system according to WHO (2007), defends as a system consists of all institutions, individuals, and actions whose major purpose is to promote, restore or maintain health”.

Medical services are joint activities that cover many of participants (e.g. Doctor, nurse, radiologist, etc.) who work towards a common purpose of providing medical services.

2.2.2 E-Health Definition

A combination of 'E' and 'health' created the term e-Health that many scholars' efforts have been made to define. There are many definitions of e-Health already existing in the literature. Table (2-1) illustrate some of these definitions.

Table (2-1): E-Health Definitions

Author	Definition
WHO (2004)	"A new concept means the using of electronic communication and information technology in the health sector, where digital data - transmitted, stored and retrieved electronically - for clinical, educational and administrative purposes, both at the local site and across wide geographic regions (at a distance)".
Pagliari et al.,(2005)	"E-Health = Medicine + Communication + Information + Society"
Blaya et al., (2010)	"The use of information and communication technologies (ICT) in support of health and health-related fields, including healthcare services, health surveillance, health literature, and health education, knowledge and research"
European Commission (2012)	"The use of modern information and communication technologies to meet needs of citizens, patients, healthcare professionals, healthcare providers, as well as policy makers".

This technology which emerged early in the 21st century and is an all-encompassing term for the combined use of electronic information and communication technology (ICT) in the health sector. The use of e-Health has enhanced state-of-mind, a way of thinking, an attitude and behavior, and a commitment to networking, facilitated global thinking, and improved health care on local, regional, and worldwide (Cashen et al., 2004).

It appears there are synonyms for E-Health term. According to Blaya et al., (2010), the term is used synonymously with health information technology (IT), while Mekawie (2013) noted that, when ICT is applied in health care, it is known as telemedicine, medical informatics. Recently the term e-Health is commonly used in literature instead of above terminologies (Healy, 2008).

According to these definitions in literature, we can summarize e-Health as a term that includes any ICT'-based health process, such as audio or video tape, satellite TV, computer, local intranet/extranet tape. This technology used to improve healthcare services delivery locally, regionally, and worldwide, and has the power to significantly strengthen patient-physician relationships and vice versa.

2.2.3 Categories of E-Health

E-Health system consists of a number of applications of information technology (IT) related to health service. Blaya et al., (2010); Ahlan & Ahmad (2014); Viitanen (2009; Pagliari et al. (2005) classified the system into eight categories as shown in Table (2-2).

Table (2-2): E-Health Categories

Category	Definition
Electronic health record	"An electronic record of health-related information on an individual that can be created، managed، stored or consulted by clinicians or medical staff. In literature, the term electronic medical record is used as a synonym".
Laboratory information management system	"A system for laboratory-specific activities or for reporting results to administrators and health care personnel".
Pharmacy information system	A system used to request, track medications, or medication orders, and reduce the loss of medicines. The term e-prescription is used as a synonym.
Patient registration or scheduling system	The system for monitoring and managing the patients' movement.
Monitoring, evaluation, and patient tracking system	The system utilize for aggregate reporting of information, program surveillance, and tracking of patients' status.
Clinical decision support system	"Software applications that integrate patient data with a knowledge base and an inference mechanism to produce patient-specific output in the form of care recommendations، assessments، alerts and reminders to actively support medical staff in clinical decision-making. Briefly, it helps doctors and other medical experts to manage their patients with ease".
Patient reminder system	The system used to remind patients to perform a specific action, for example, take medicine or attend the clinic for health checking.
Research/data collection system	The system used for collecting data from different locations or for storing, managing, or reporting on data used for researching purposes.

2.2.4 Benefits of E-Health

E-Health adaptation has inspired many researchers to explore this evolving area and the associated benefits. Literature reviews have indicated that benefits are clear at least in theory.

Applying e-Health shifted healthcare delivery from its traditional form to advance form, also improve the quality of care (Viitanen, 2009). Furthermore, the integration of ICT and healthcare has brought a lot of benefits such as, cost, effort and time reduction, increasing medication safety, improving the health services quality, increasing the satisfaction of both employees and patients (Omary, et al., 2010; Jung & Loria., 2010; Ibrahim., 2013). Additionally, scale up treatment delivery to numerous number of patients in both developed and developing countries, and reducing the losses of human lives (Blaya et al., 2010).

The significance of the Health IS emerges from the value of their role in saving all types of medical information and data including patient personal information and any other medical data related to him/her. In addition, this system recording any medical services that have been provided to the patient, such as diagnoses, treatments, follow up reports about his/her health position and important medical decisions (Cebul et al., 2011; Douglas et al., 2010; Wolfstadt et al., 2008)..

- A systematic review by (Codagnone & Lupiañez-Villanueva, 2013), identified three broad areas of e-Health benefits which are:

Quality of care: E-Health has been shown to contribute the quality of care in several ways, for example; Improved clinical monitoring, fewer medical and prescribing errors, enhanced surveillance and monitoring, better time utilizing and that less time is spent to deliver health services, improves the accessibility of healthcare services, and continuity of care that create patients satisfaction with e-Health.

Cost savings: Using the e-Health has a huge potential for medical services cost savings, for example; Reduction of costly medical errors, prevention of costs from treatment side effects, and reduced administrative costs (including papers and printing cost).

Organizational efficiency: The profound efficiency impacts would occur at a deeper organizational level through changes in the work practices and processes in role and tasks carried out by health professionals and on delegation of work activities

- Austin & Boxerman (2003); and Jung (2008) pointed that the main stakeholders who benefit from e-Health system involve, employees (doctors, nurses) patients (consumers), employers (organizations), and others involved in the provision of health care.

Patients: Patient can also be viewed as consumers (Cashen et al. 2004). E-Health applications enhance the effectiveness of healthcare by reduction of waiting times for the patients and improving patient care. In addition, it strongly influences on the relationship between the patient and the healthcare provider (Deluca & Enmark, 2000; Austin & Boxerman, 2003).

E-Health has access to thousands of health care Internet sites where they can gain unlimited health information since the Internet not only offers patients the ability to search for and gather health information regarding healthy lifestyles, health and self treatment, but also it can provide greater convenience to patients to accept it; Since this makes it possible for them to access information about their own health from home, rather than having to travel to the health center to meet doctor and stand in line (Jung, 2008).

Other studies have found that many times patients actually do not need to see their physician, because the required information could be provided by other means than a face-to-face visit, for example: they can e-mail them questions about health issues and receive responses from their doctors, and this will increase their satisfaction (Goldstein, 2000; Kind & Silber, 2004; Mou & Cohen, 2014).

Employees: E-Health is an opportunity to promote serving patients through facilitating and enhancing medical practitioners work performance (Kirshenbaum, 2002). Medical history brings advantages to medical staff, as the duplication of medical steps can be avoided, reducing diagnosing and treatment errors, conserving workers time and increasing their satisfaction (Hayrinen et al., 2008).

The success of e-Health depends on the quality of the information available to healthcare professionals in making decisions and communicating with each other during patient care.

Organization: Organization faces rising in healthcare expense, so they are searching new and innovative approaches to reduce these costs, and aim to improve the quality of healthcare at the same time. Some institutions consider the Internet as a value mean to streamline healthcare administrative expenditures, and to enhance communication among the multiple healthcare institutions (Meyers et al., 2002).

In addition, the organizational management activities which include posting employee information on a healthcare Intranet Web site, delivering educational programs, listing job announcements, announcing employee health benefit programs and the health promotion activities of the company, are also offered through its Intranet site because they reduce health care expenditure and enhance the productivity (Degroot & Kiker, 2003).

2.2.5 E-Health Challenges

Applying healthcare information system is accompanied by many challenges and difficulties that influence the adoption of this technology.

Grimson et al., (2000) discussed a number of challenges facing ICT adoption in healthcare in countries whether developed or developing. These challenges are: (a) the complexity of medical information and data (b) problems in data entry (c) privacy and security concerns, d) the absence of a unique national patient identifier, and (e) lack of awareness about the benefits and risks associated with information technology, Omary et al., (2010) also agreed with them.

George et al., (2014) mention the legal, ethical and governance challenges, for example; Who is the owner of this information and Who has permission to access to this information, Kind & Silber (2004) agreed with them about the ethical challenges, and mention Health Internet Ethics have developed the “e-Health Code of Ethics” in an effort to respond to concerns about reliability of information, confidentiality, and privacy.

Nemeth et al. (2005) noted that understanding the role of IT in healthcare centers requires knowledge of the cognitive work that the system is intended to support. Several currently established challenges seem to be related to end user issue considerations in healthcare IT development. Viitanen (2009) agreed with them and mention that the successful healthcare HIS implementation in healthcare institutions appears to be a difficult task. He highlighted the end user’s resistance to accept and utilize the new technology as the core challenge associated with the use of such technology in health care institutions.

A survey report published by the European Commission, pointed that the bulk of European health professionals agree that technology enhance the output quality of care services they provide. Healthcare practitioners who are still not utilizing technology cite the lack of technical support and training as master obstacle. Thus to expand the use of electronic health, they ask for more training, more technology in medical education and better electronic networking among health care staff who want to share medical information (European Commission, 2008).

2.3 Information and Communication Technology in Healthcare

Recently, there has been an interest to utilize computers, internet and communication networks, which abolish the constraints of time and distances in the way, that made the world as a small village. In light of this, there is a determined effort to recruit ICT's tools in the health process and activates in order to increase their efficiency of healthcare services.

ICTs defined as "tools that facilitate and smooth communication, processing and transporting of information, also the sharing of knowledge by electronic means. This include full range of electronic digital and analog ICTs, from radio and television to telephones (both fixed and mobile), computers, and electronic-based media such as digital text, audio-video recording, and the Internet, involving Web 2.0 and 3.0, social networking and web-based communities" (Fromm et al., 2009).

ICT tools change how health care is delivered and how health systems are run. Today's, ICT is essential for health systems to meet obligations to deliver care, educate students, treat patients and monitor public health. ICT in its many forms is the basis to coordinate complex activities, ensuring quality, promoting collaboration and sharing the growing body of knowledge in health (Otieno, 2013).

Dixit et al., (2008) categorizes the ICT tools used in healthcare as e-Health into two separate forms:

1. The synchronous communication (Real Time): Which refers to the manner of communication where the transfer takes place

simultaneously. Eg; audio or video conferencing utilizing the telephone, mobile phone, or satellite communication.

2. The asynchronous communication (Store and Forward): Which refers to manner of communication where the transfer takes place over a period of time, or in separate time frames, not requiring the transmission to take place at the same time. For example, e-mail.

The new application of ICT, such as the internet, computer, and smart phones has become commonly available (Eide et al., 2010). Using communication technology infrastructure like networks, are necessary to share healthcare information in health domain as well as in other domains (Marrow, 2008). For this, most countries began investing in the communication infrastructure of their health care delivery system (Viitanen, 2009).

Tsiknakis & Kouroubali, (2009), mention most hospitals had operational ICTs to support their financial and administrative functions. In hospital, the health information system (HIS) is known as an information system developed to control and manage tasks in a hospital.

HIS technology is crucial to strengthen the health care services. It is typically used to describe hospital computer systems with tasks like patient admission and discharge, order entry for laboratory tests or prescription, and billing functions (Coeira, 2003). It also necessary for the automated processing of accumulated data and to manage patient health care

procedures to support real-time coordination of distributed hospital resources (Sackmann et al., 2002).

2.3.1 Palestinians ICT Sector Background

Information and Communications Technology sector is considered a service economy. IT plays a significant role in Palestinian economy and it is one of the fastest growing sector in the economy.

Many economic and outsourcing experts believe that Palestinian ICT sector is highly competitive and is capable to meet the developmental need of Palestinian economy (AVASANT, 2013; Solutions for development consulting co., 2013; UNSCO, 2016).

ICT domain considered the highest contributor to Gross Domestic Product (GDP) as compared to other sectors. Between Q1/2015 and Q1/2016 there was a significant expansion in real value added in ICT sector (2.8%) for West Bank, and (9.1) for Gaza Strip during the same period. Also the percent contribution to real GDP is 7.3% for West Back, and.05% in Gaza Strip (UNSCO, 2016). While the Economic performance for the year 2014 as follows: the value add of the sector is 11.40%, the GDP is 6.10% (MTIT, 2015).

There are around 300 enterprises working in the ICT sector, covering a wide spectrum of the ICT market, including hardware distributors, software development firms, office automation vendors, and internet

service providers, and telecommunications companies, ICT consulting and training companies. (MTIT, 2013).

In education, thirteen (13) Palestinian Universities teach ICT related field, Also 2500 of students' yearly graduates (PITA 2012).

Avasant (2013) analyzed the market demand for ICT services based on the trade in various sectors; it found that ICT services wide engaging with six sectors, these sectors are: commercial agribusiness, banking and financial services, higher education sector, government sector, municipality sector, tourism sector, and other professional services.

According to some statistical indicators, the outlook for the Palestinian ICT sector is a promising trend. PCBS publications show that using mobiles, computers, and the Internet is increasing every year more than previous years.

Statistics show that:

- The percentage of establishments conducting research and development (R&D) activities related to ICT totaled 2.5% in Palestine in 2011: 1.5% in the West Bank and 5.0% in the Gaza Strip (PCBS, 2012)

- Approximately, 3,007,869 citizens access to internet in Palestine and representing 44.7 % of Palestinian population, and 2.1 % of Middle East population (Internet World Stats, 2017). These percentages compared to other Middle East countries are shown in Table (2-3)

- 47.0% of enterprises used computer in the Palestine in 2011: where 49.6% in the West Bank and 40.8% in the Gaza Strip (PCBS, 2011).

- 63.1% of households in Palestine with own computers in 2014, where 66.9% in West Bank, and 55.6% in Gaza strip (PCBS, 2014). In 2011, the average became 50.9%, and in 2009 was 49.2 (PCBS, 2011).

- 48.2% of households in Palestine with internet access at home in 2014, where 42.2% for West Bank, and 30.4% for Gaza strip (PCBS, 2014). In 2011, the average was 30.4%, and in 2009 was 28.5% (PCBS, 2011).

- 97.8% of households in Palestine have a mobile phone in 2014: where 97.9% in the West Bank and 97.7% in the Gaza Strip (PCBS, 2014). In 3013, the average was 96.5%, in 2011, the average was 95%, and in 2009 was 92.4 (PCBS, 2011).

- 60.2% of individuals (aged 10 years and over) in Palestine used a computer in 2014: where 59.5% in West Bank and 61.2% in Gaza strip (PCBS, 2014). In 2011, the average was 53.7%, and in 2009 was 57.1% (PCBS, 2011).

- 53.7% of individuals (10 years and over) in Palestine used the Internet in 2014- 54.5% for West Bank, and 52.2% for Gaza strip (PCBS, 2014). In 2011, the average was 39.4%, and in 2009 was 32.3% (PCBS, 2011).

  All the above statistics are shown in Tables (2-3), (2-4).

Table (2-3): Middle East Internet Usage and Population Statistics 2017

MIDDLE EAST	Population (2017)	Users, in 2000	Internet Usage	Population	Internet users	Facebook 2016
Bahrain	1,418,895	40,000	1,278,752	90.1 %	0.9 %	800,000
Iran	80,945,718	250,000	56,700,000	70.0 %	40.1 %	17,200,000
Iraq	38,654,287	12,500	14,000,000	36.2 %	9.9 %	14,000,000
Israel	8,323,248	1,270,000	5,941,174	71.4 %	4.2 %	4,900,000
Jordan	7,876,703	127,300	5,700,000	72.4 %	4.0 %	4,800,000
Kuwait	4,099,932	150,000	3,202,110	78.1 %	2.3 %	2,300,000
Lebanon	6,039,277	300,000	4,545,007	75.3 %	3.2 %	3,100,000
Oman	4,741,305	90,000	3,310,260	69.8 %	2.3 %	1,500,000
Palestine	**4,928,225**	**35,000**	**3,007,869**	**44.7 %**	**2.1 %**	**1,700,000**
Qatar	2,338,085	30,000	2,200,000	94.1 %	1.6 %	2,200,000
Saudi Arabia	32,742,664	200,000	20,813,695	63.6 %	14.7 %	14,000,000
Syria	18,906,907	30,000	5,502,250	29.1 %	3.9 %	n/a
UAE	9,397,599	735,000	8,515,420	90.6 %	6.0 %	7,700,000
Yemen	28,119,546	15,000	6,773,228	24.1 %	4.8 %	1,800,000
TOTAL	250,327,574	3,284,800	141,489,765	56.5 %	100.0 %	76,000,000

Source: Internet World Stats, (2017).

Table (2-4): Main Selected ICT Indicators for Different Selected Years.

Indicator	Year			
	2014	2011	2009	2006
Percentage of Households with Own Computer	63.1	50.9	49.2	32.8
Percentage of Households with Internet Access	48.3	30.4	28.5	15.9
Percentage of Households with Mobile phone	97.8	95.0	92.4	81.0
Percentage of Persons (10 Years and Over) Who Use the Computer	60.2	53.7	57.1	50.9
Percentage of Persons (10 Years and Over) Who Use the Internet	53.7	39.4	32.3	18.4

Source: Palestinian Central Bureau of Statistics, (2014).

Despite ICT sector in State of Palestine is growing and increasingly contributes well in Palestinian's GDP, it still faces many challenges significantly restrict the development of this sector. The major challenges are represented by: poor and weak ICT infrastructure, political environment

and restrictions imposed by Israel on ICT sector, the limited and minimal financial and human resources dedicated to Research and Development by the government and the private sector in Palestine. The ICT worker in Palestinian territories is less prepared in terms of skills and competencies than ICT workers in neighboring markets, restrictions on the movement of people, goods and restrictions on import (Solutions for development consulting co. 2013).

2.3.2 E-Health System in Palestine

Palestine is still in the infancy stage of computerizing and transforming their administrations, businesses and individual life into an internet –based operations including e-government, e-commerce, and e-shopping. Among the neighboring countries, Palestine has good convenient and high-quality telecommunication facilities. It applies the latest technologies in telephone and Internet services.

Despite the political environments persisting in Palestine, it shows better number of Internet users penetration rate compared with neighboring countries of Eastern Mediterranean as it shown in Table (2-3), where approximately, 3,007,869 citizens access to internet in Palestine, representing 44.7 % of Palestinian population, and 2.1 % of Middle East population (Internet World Stats, 2017).

The variation and diversity in the socio-economic and cultural situation among countries of the Eastern Mediterranean Region have resulted in variation and multiplicity of constraints in e-Health

implementation (Al-Shorbaji, 2009). Palestine, which is one of these countries, faces these constraints. The challenges range from lack of awareness of potential e-Health benefits, shortage, or total lack of funding by the government and other healthcare providers, confidentiality concerns and lack of legal framework, weakness of information infrastructure, complex systems coupled with the lack of skilled staff; and lack of data standards that permit the exchange of health data.

Palestine health services have for decades relied on a labor-intensive system of hand-written of patient records, prescriptions, and registers. The Health institutions recognized emerging ICT to Healthcare services has potential to strengthen care services for both public and private health sector. As a response, e-Health initiative was launched.

The ministry of health strategic plan for 2014-2016 encourages local health institutions to invest in electronic health technology. However, most of these institutions could not adopt the e-Health project due to a high cost, which is the main barrier in implementing such projects (Palestinian National Health Strategy 2014-2016).

E-Health in the Palestinian health sector is yet mature, and grow slowly. That is why the Palestinian Ministry of Health, local healthcare institutions, and international organizations should cooperate to promote the implementation of e-Health projects and framing strategies to foster the e-Health usage.

As part of the developing strategies of the Palestinian health sector which aimed to upgrade the quality of medical services for the Palestinian citizen, the Ministry of Health with the support of the project "the reform and development of the health sector", funded by USAID, began implementing a computerized, comprehensive health system, covering all components of the health sector, starting with patient health records, passing through the rationalization of expenditures, to improving human resources management, and ending with accurate scientific reference for policy and future health plans.

The project launched before six years and it will cover most public hospitals and health centers in West Bank. Executing the project required creating strong IT infrastructure; which included a construction of servers' room link all hospitals department with network, supply computers, printers, in addition to training session gave to every user in the hospitals.

The new system abolished the old system, which was based on paper records. The use of ICT in hospitals offers great potential for improving the quality of provided services, increasing the efficiency of performed tasks, and reducing the organizational expenses. The system also linked all health facilities and hospitals to one network; that enables the exchange of information between the Ministry of health and its facilities in a quick and smooth manner.

IT specialist, (2016) noted that the system will turn the work in the health sector from traditional-manual work to a computerized digital work;

it will also save time and effort in providing care. Additionally, it helps to make the right decisions regarding the hospital management, policies formulation, and health hazard prevention.

Regarding private hospitals, a few numbers of hospitals in State of Palestine adopted HIS; because this type of systems requires a huge financial resource, starting with software and equipment purchase, to employing specialists, creating strong IT infrastructure, availability of Internet, training sessions... etc.

Ibrahim (2013) research discussed the impact of ICT on Palestinian health centers and explored the benefits which can gain from involving ICT in healthcare sector by selected the Electronic Health Record (EHR) system as a tool of ICT to be assessed in Palestine.

ICT tools have a significant impact on Palestinian healthcare sector. Implementing and using EHR system can influence positively the healthcare service by the following benefits (Ibrahim, 2013).

- Decreasing effort, cost, time.
- Improving Palestinian patient safety and quality of health care.
- Supporting medical decisions.
- Rising efficiency and quality of Palestinian healthcare center.
- Increasing Palestinian patient and health practitioner satisfaction.

- Improving Palestinian health center image.

2.4 Technology Adoption in Healthcare

Various research available in the literature have been trying to explain the delay or unsuccessful implementation of e-Health and link this concern to the acceptance or resistance of medical practitioners towards this system.

WHO (2004) mentions that the integration and absorption of e-Health into the everyday life of healthcare professionals is becoming a reality in developing as well as the developed world.

The adoption of ICT is the main factor for economic and social development. However, health care has been one of the slowest sectors to adopting and implementing an electronic information system. Nicola & Jarke (1998) mention ICT technology still underdeveloped in developing world, Omary et al., (2010) support this and noted that the developing countries are still depending on the conventional health care technique.

Modern ICT is being taken into usage in the healthcare domain at an increasing pace (Suomi, 2000). Today, different healthcare IS being used in hospitals that aim to serve groups of healthcare practitioners in their daily work with patients (Viitanen, 2009). The increase utilizes of technological innovations in healthcare is crucially beneficial for both healthcare professionals and patients during the diagnosis and treatment processes (Khalifa & Alswailem, 2015).

E-Health systems usually need a lot of difficult complementary changes and support during the process of customization and final tuning. Also, it needs a technical support from various software, hardware, networking, and service vendors when technical problems appear, such as poor user software interfaces, slow computer machines or networks, or difficult data entry and retrieval especially when the hardware is old (Dansky et al., 1998).

HIT adoption and usage remain a major concern for both researchers and practitioners. Despite impressive advances in hardware and software capabilities, the problem of underutilized systems continues. However, a significant progress has been made over the last two decades in explaining and predicting user acceptance of information system (Venkatesh & Davis, 2000).

The European Commission in 2011 published a survey report about European electronic services in healthcare (e-Health) the report shows that the percentage of European doctors using the computer is 87% and 48% with a broadband connection. European medical staff and doctors increasingly store and send patients' data electronically such as e-prescriptions, x-ray film, electrocardiogram printouts, and lab reports. By using e-Health applications, the medical services have already improved healthcare in Europe through (eg: better medical decision and less waiting time for patients). In addition, the report pointed areas where the medical practitioners could make better use of ICT to offer medical services such as

telemonitoring, e-prescriptions, and medical services cross-border (European Commission, 2008).

Codagnone & Lupiañez-Villanueva (2013) mention some negative aspects of e-Health such as (1) Increased workload due to data entry (2) The risk of too much or overload information, difficulties in analyzing and acting upon it (3) Declining in work quality during the initial years.

2.4.1 Technology Acceptance Model (TAM)

Eight models of information technology acceptance were discussed in literature. These models were: the model of PC utilization ; the technology acceptance model (TAM); the motivational model; the theory of planned behavior; the theory of reasoned action; the innovation diffusion theory and the social cognitive theory; a model combining the technology acceptance model and the theory of planned behavior (Venkatesh et al., 2003).

TAM was developed in the 1980's, in light of concern that professionals not utilize It available to them. Its originators reasoned that the key to increase utilizing was to first increase acceptance of IT, which could be estimated by asking individuals about their future intentions to use the technology. Knowing the factors that shaped one's intentions would allow organizations to manipulate those factors in order to enhance acceptance, and thus increase IT use (Holden & Karsh, 2010).

Davis et al., (1986) study highlighted that the development of TAM is to explore the determination of technology usage. TAM provide an

explanation of the determination of computer acceptance that is generally capable of explaining end-user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified" (Davis, 1989).

The core of TAM is to provide a basis for discovering the influence of external variables on internal beliefs, attitudes, intentions, and usage. Several studies have found that (TAM) consistently explains a significant proportion of the variance, typically about 40%, in usage intentions and behavior. This model theorizes that an individual's behavioral intention to utilize a system is determined by two beliefs: The first is perceived usefulness (PU), which is defined as the extent to which a person believes that using the IT system will enhance his or her job performance. The second is perceived ease of use (PEOU), which defined as the extent to which a person believes that using the system will be free of effort (Pai & Huang 2011; Holden & Karsh 2010).

The TAM model assumes that the effects of external variables, for example: (PU) and (PEOU) mediate system characteristics, and training, effect on intention to use. Additionally, according to TAM, PU is also influenced by PEOU because the easier the system is to use the more useful it can be (Davis, 1989). Figure (2.1): illustrates the components of the Technology Acceptance Model.

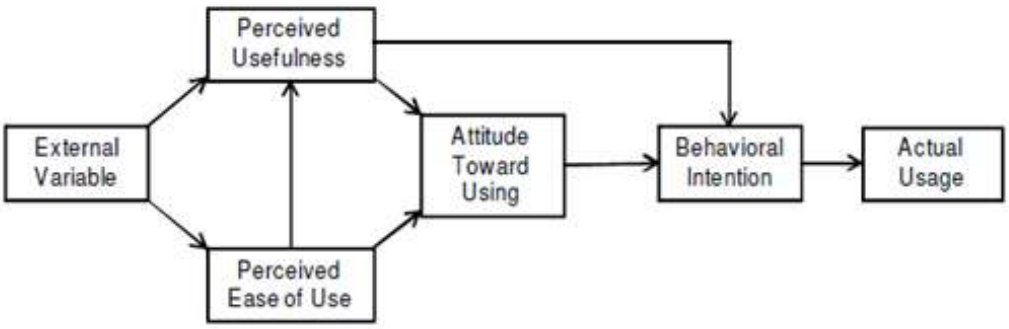

Figure (2.1): Technology Acceptance Model (TAM). Source: Davis et al. (1989).

TAM was derived from the theory of reasoned action (TRA), and TAM axioms that the utilize of an Information system is determined by the behavioral intention, but on the other hand, that the behavioral intention is determined by the individual's attitude towards the utilization of the system and also by his/her perception of its interest.

According to Davis (1989), the attitude of the person is not the only factor that determines his/her utilization of the system, but also based on the impact, which it may have on his/her performance. Therefore, even if a professional does not welcome the information system, the probability that he/she will utilize it is high if he /she perceives that the system will improve & enhance his/her work performance. Besides, the TAM hypothesizes a direct link between PU and PEOU. With two systems offering the same features, a user will find more useful the one that he/she finds easier to use (Dillon & Morris, 1996).

A great deal of research has been conducted using TAM as a framework, and new models such as TAM2 and TAM3 were developed from it. While TAM2 focused on identifying determinants of PU and

moderating variables, TAM3 concentrated on interventions that can influence the acceptance and use of IT in an organization (Venkatesh & Davis, 2000; Venkatesh & Bala, 2008).

The reason why TAM was chosen in our research is because; it has been tested empirically and supported through validations, replications, and applications (Chau & Hu 2002; Lee 2010; Holden & Karsh, 2010). TAM is one of the most powerful, strong and parsimonious models for predicting user acceptance, especially in information system context (Khasawneh & Ibrahim, 2008). According to Venkatesh (2000), "the parsimony of TAM combined with its predictive power makes it easy to apply to different situations".

2.4.2 Factors Affecting the Acceptance of E-Health System

Several studies, for example (Ahlan & Ahmad 2014; Hage et al. 2013; Murray, 2011; Murray et al., 2010; Gagnon et al. 2010; Yarbrough & Smith 2007) provides a systematic review of the usage of ICT in health sector in order to highlight the factors related positively or negatively to the adoption of ICT by health professionals in a clinical environment (Codagnone & Lupiañez-Villanueva, 2013).

A systematic review for 111 scientific articles reported the most frequently factors associated with adopting this technology (Codagnone et al., 2013). These challenges was grouped into five categories and are shown below.

- **Technology factors**: The first factor is the Access; this factor relates to physical access to PC, internet and download speed. The second is related to Software Characteristics and Interface Design of the system; where poor design and technical difficulties are the most frequently cited barriers. The third one related to Cost Issues; there is a need for that in some countries that are looking for low-cost of technological alternatives particularly developing and rural area. The fourth one related to Legal Issues; confidentiality – privacy and security concerns. Finally, the localization; which is concerned with the suitability of such technology to religious, local culture, values and languages and appropriate for the users.

- **Individual and professional factors**: They represent the characteristics of health professionals in terms of acceptance of e-Health. Among these features are the professional's familiarity with ICT, confidence in the use of computers and other technologies, the motivation to change their habits, and their vision about the benefits of e-Health technology and tools, their commitment to use e-Health, motivation to use the ICT (readiness), resistance to use, individual demographic characteristics (age, gender, experience, etc.), and the time which is needed to do work by using the technology of e-Health.

- **Human environment factors** (associated with patients and colleagues): The first one associated with Patients; patients' attitudes and preferences regarding ICT, patient health professional interaction

and applicability to patients' characteristics. The second one is associated with Peers; attitude of colleagues about ICT, the support and promotion of ICT by colleagues and the Relations between them.

- **Organizational environment** (Internal environment): The first one is associated with the Work; such as structure of work, time constraints and workload, work flexibility, relation between/ and interactive with different health professionals, professional culture. The second is associated with Resources availability; for example, material and human resources available. The third is Organizational aspect; lack of training, absence of a leader, lack of user involvement in the design, user participation in the implementation strategy, relations between management and health professionals, organizational support, organizational incentive mechanisms, and other cultural or organizational aspects.

- **External environment factors**: Which are the concerns related to Funding of ICT and the Inter-organizational relationship

2.4.3 Factors Affecting the Acceptance of E-Health System in Palestine

Based on previous literature and many conducted interviews, the first question answered. What are factors affecting the acceptance on e-Health system?.

Two sets of factors affecting e-Health system was used to formulate the research framework, and are categorized as external factors, which

include, System Characteristic, Employee Training, Fear of Accountability, and behavioral intention factors, which include, Output Quality and Culture.

❖ **System characteristics**

System characteristics categorized into two main groups, the first one is information-related characteristics such as: accuracy, currency, completeness, and personalization, the second group is system-related characteristics such as: accessibility, reliability, flexibility, adaptability, usability, and interactivity. Many studies (eg. Mueller and Zimmermann, 2009; Nov &Ye, 2008; Wang et al, 2007; Wixom & Todd, 2005; Delone & Mclean, 2003) focus on system characteristic as factor affect ICT acceptance (Codagnone & Lupiañez-Villanueva, 2013).

Rho, Choi, & Lee (2014); Ahlan & Ahmad, (2014); Yu, Li, & Gagnon, (2009) studies mention that the better system design the better intention to system usage. The results of these studies show that system characteristic has positive direct influence on PEOU and PU.

❖ **Training**

Training provides users with a hands-on mechanism to deployment of useful, relevant information about the new system, and allowing them to explore the system from a technical standpoint & functional perspective. Furthermore, training can mitigate the invoke of passive reaction from users toward the new system (Al-Sayyed & Abdalhaq, 2016; Al-Shorbaji,

2009; Khalifa & Alswailem, 2015; Venkatesh and Bala, 2008; Tung et al., 2008).

According to the Venkatesh and Bala (2008); Allahyari & Ramazani (2012) studies, when the trainees obtain adequate training it would qualify their familiarities with any technology, and thus, this will affect positively on their perceptions about the ease of use and the usefulness of the system. Also according to Venkatesh (2006) training, can assist users make better adoption decision about the new system and help managers to make effective decisions during implementation.

It is very important within the health institution management to have well defined strategies for training or technical support for the professionals and medical staff. Good training can be an element of adoption, but in case the training received is not suitable, it can become a barrier for acceptance (Codagnone & Lupiañez-Villanueva, 2013).

As a result for Venkatesh, (2006); Venkatesh & Bala, (2008); Allahyari & Ramazani, (2012) studies, training has a direct effect on PU. Also, PEOU use influenced directly by training according to Venkatesh, (2006); Amoako-Gyampah and Salam, (2004) studies.

Also the result of Wu et al., (2008) study about utilizing ICT in health domain shows that training had a direct effect on PU, PEOU, a study about using ICT in learning sector conducted by Al-Sayyed & Abdalhaq, (2016) study show the same results.

❖ **Fear of accountability**

Fear of accountability is a factor that emerged through the interviews conducted with health specialists and the users of e-Health system in targeted areas. People are fearful of many things in today's workplace and from accountable for their job performance. Many users asserted that fear of accountability, which related to the mistakes that may occur when using the system put them under management punishment or legal issues, and thus affects the intention to accept the system.

Mistakes may occur for example through (1) entering wrong medical data that's unable to modified or (2) neglecting user account password and thus, unauthorized access may occur by another user- hence the real data will be exposed to manipulation.

Management support plays a vital role in promoting open discussion of errors in the hospital. After making a mistake, healthcare professionals may experience emotions such as shame, guilt, or depression. Litigation, complaints, and actions by regulatory authorities can present additional burdens in a small subset of these situations. Particularly effective to address these issues can be actions by senior managers to talk openly about past mistakes and problems, to publicly endorse the concept of blame-free error reporting, and to offer encouragement and support to those directly involved. This can mitigate the fear of system usage (Wu et al., 2008)

❖ **Perceived risk**

Perceived Risk is the degree to which an individual expects certain negative outcomes and the danger and severity of negative consequences from using e- health (Jung, 2008). Perceived risk is described as a cognitive assessment rather than emotional responses, also, is formulated from thoughts, believes, perceptions, etc. (Featherman & Pavlou, 2002).

Jung, (2008) highlighted the risks involved with utilizing e-Health system mainly from the danger of receiving outdated or simply wrong information, which can have severe consequences in the health-care setting. Additionally, the risks associated with utilizing e-Health include the fear of losing privacy, as health care can be a very private and sensitive issue, and the fear of a lack of security.

International related studies mentioned perceived risk as a major factor, which influences e-Health adoption (Zhang, 2015). Users feel risk toward accessibility; reliability, response time, and speed of Internet connection during perform work. Furthermore, users feel risk if e-Health services are not convenient with their needs.

In the e-service context, consumers face numerous performance, financial, privacy, and even psychological risks. Reducing risk perceptions is thus considered essential to the success of e-services (Mou & Cohen, 2014).

Many studies infer that perceived risk factor is the main factor that influences technology adoption by employees and managers. In addition,

perceived risk influences the factors of TAM and TPB (Schmiege et al., 2009)

A study by Ortega Egea and Román González, (2011) mention that Perceived Risk to has a positive effect on perceived ease of use and perceived usefulness, Featherman & Pavlou, (2002) agreed with them. Whereas, Rose & Fogarty, (2006) indicated that perceived riskiness is proposed to have a negative effect on PEOU and PU of self-service technologies (SSTs).

- **Output quality**

Output quality is "the degree to which a person believes that the system performs his or her job tasks well" (Venkatesh & Bala, 2008; Venkatesh & Davis, 2000). In other words, it is defined as "the degree to which a person judges the effect of new IT system" (Wu et al., 2011; Lin & Lu, 2000).

Venkatesh and Davis (2000) indicated that output quality is distinct from perceived usefulness, as a different judgmental process is involved. Also, assume that the output quality of e-Health will positively influence perceived usefulness.

Output quality in the consumer service context captures a person's perception of the quality of the outcome of using any service. In the case of e-Health, the output of the e- health services investigated here is information, and information quality in health care, which depends on

several aspects: (eg. Understandability, relevance, usefulness, and reliability) according to (Song & Zahedi, 2006).

Furthermore, the quality of data recorded in e-Health system varies widely and affect output quality factor, due to a range of socio-technical factors surrounding individual users and the variations in the mechanisms and practice of data coding (Josip et al., 2008). Additionally, the accurate diagnostic and therapeutic procedures by physicians in their professional decision making when using the system affect the output quality (Yarbrough & Smith, 2007).

Perceived output quality may prove to be predictive as an antecedent of the medical professional acceptance of health IT or e-Health.

A study conducted by Mutula in 2015 mention that output quality has a direct positive impact on intention to use e-Health technology (Mutula, 2015).

- **Culture**

Culture is a factor reported in several related studies. According to Ralph & Holloway (1969) ; Kluckhohn (1962), “Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiments in artifacts; the essential core of culture consists of conventional, classic ideas and especially their attached values”.

Khasawneh & Ibrahim, (2008) mention that there are differences between developed and developing countries in how they use ICT that can be traced to differences in culture. Much of the culture is steeped in ancient rituals and tradition and is non-believers in modern medicine and general health care.

Usually, people comfortable with doing things in traditional way and the way they have always done them (Jung & Loria, 2010). Therefore, many researchers expect that integrating subjective norms will strengthen the understanding of differences in behavioral intentions and will allow a better capturing of cultural effect on IT use.

In addition, resistance by some healthcare practitioner to change their work from routine, manual way to electronic documentation way is a common problem in both developed and developing countries (Triandis, 1977).

Changing the culture can be difficult and takes time. Thus, without management support, the cultural change in a hospital may not be possible (Wu et al., 2008). Strong, long-term commitment is needed in order to manage the changes in roles and workflow introduced by the E-Health system, including efforts to generate a positive culture of change through a clear training program delivered by people familiar with the clinical tasks and issues (Cucciniello et al., 2015).

Most health executives and information managers are aware that it need time to change the work culture or at least modify health practitioner behaviors and attitudes (WHO, 2006).

If cultural values agree with traditional health services and not trust communication channels, then E-Health technology will not be adopted in the society.

Jung & Loria (2010) and Hoqu and Bao (2015) studies mention culture doesn't influence the intention to use HIS

2.5 Previous Studies

There are many international studies, which discussed e-Health technology, information and communication technology (ICT), and the factors that influence the adoption of e-Health. Those studies provide theoretical and empirical background about E-Health technology. Therefore, it is very important to explore those studies to understand, analyze, and highlight the factors that influence E-Health technology. In addition, these studies give a good chance to compare our findings with others.

Mutula (2015) study: Aims to determine factors affecting attitudes and perceptions of nurse's staff towards the usage and utilization of Information and Communication Technology (ICT) in 16 hospitals in KwaZulu-Natal (KZN) province, South Africa. Data were gathered through a survey questionnaire, and factor analysis performed to extract relevant variables. The survey tool included a set of twenty-two perception and attitude items given out to 226 nurses in sixteen healthcare facilities in a KwaZulu-Natal province in South Africa.

The results detected positive dispositions of nurses towards the utilization of ICT. Furthermore, the results show that self-efficacy, adoption of computers to improve nursing care, confidence in using computers, usefulness, output quality, interactability and knowledgeability were the main factors influencing attitudes and perceptions of nurses towards the use of ICT in the workplace. The results may inform institutional and provincial ICT infrastructure development decisions to improve the nursing services in hospitals.

Abdekhoda et al., (2015) study**:** Medical staff adoption seems to be a significant matter when comprehensive implementation of Electronic Medical Records (EMR) is considered. This work was conducted to determine the organizational contextual factors affecting Medical staff ' adoption of EMR. A sample of 330 Medical staff working in hospitals affiliated to Tehran University of Medical Sciences was selected. Medical practitioners' attitudes toward EMRs' adoption have been assessed by a conceptual path model of Technology Acceptance model (TAM) and organizational context variables. The Collected data were analyzed by SPSS16 using regression analysis. The final model was tested by structural equation modeling (SEM) and represented by SPSS-AMOS, structural equation modeling software.

The study finding suggests that modified proposed conceptual path model explains about 56% of the variance of EMRs' acceptance. The findings also evidenced that perceived usefulness (PU), perceived ease of

use (PEOU), management support; practitioners' involvement, practitioners' autonomy, and the practitioners-patient relationship have direct and significant effect on medical staff' attitudes toward EMRs' adoption. However, training showed to have no significant effect on PU and PEOU. These factors should be subsequently the major concern of health organizations and health policy makers.

Khalifa and Alswailem (2015) study**:** The main objective of the study is to evaluate hospital information systems (HIS) acceptance and satisfaction, through investigate the influential factors that might increase or decrease acceptance and satisfaction levels among different healthcare practitioners, in order to provide solutions for successful HIS implementation. The study used a quantitative survey tool to collect data directly from different kinds of HIS users. The questionnaire contained five parts; a demographic user information part, a general HIS assessment part, a part about accessibility and availability of computers, a part about HIS and patient care and part about satisfaction with HIS.

Results show that the availability of desktop computers in the hospital was one of the most affecting factors, with a special emphasis on the availability of laptop computers and computers to smooth direct and instant data entry, and information retrieval processes when healthcare professionals are at the point of care, another factor is the organizational support of users, through providing more training to new and old users, hence training will reduce work hours additionally, to system design, where

bad or inadequate user interface or poor HIS performance, interface or poor HIS performance, such as slow response times; will reduce its chances of being accepted by users and implemented successfully.

Nuray et al., (2015) study**:** It aimed to assess the technology acceptance in health care by reviewing the predictive factor and intervention programs in Turkey. This study illustrated that the acceptance and the increase utilization of technological innovations in health care are crucially beneficial for both health care professionals and patients during the diagnosis and treatment processes.

This study focused on the theory of planned behavior, technology acceptance model, diffusion of innovation theory and unified theory of technology acceptance covering the most distinguished concepts and constructs to understand attitudes towards technological innovations. In addition, it determined the perceived benefits of technological innovations, ease of use, perceived ease of use, perceived control beliefs, confidentiality and privacy as strong influencing factors for refusing technology usage.

Hoque & Bao (2015) study: The study objective was to assess the factors influencing e-Health adoption in both developed and developing countries. However, there have been only a few studies exploring the role of cultural factors in the adoption and use of e-Health, particularly in developing countries. In this study, the researchers investigated the influence of culture on the adoption of e-Health in Bangladesh.

This study developed a more adequate research framework by integrating Hofstede's cultural dimension model (contain six dimensions) and the Technology Acceptance Model (TAM). A survey method (questionnaires) was used to gather data from respondents in different private and public hospitals in Bangladesh. The partial least squares method, a statistical analysis technique based on the Structural Equation Model, was chosen to analyze the gathered data.

In total, 250 questionnaires were collected from respondents in different private and public hospitals in targeted area. The results of this study found that whereas cultural dimensions such as power distance, masculinity, and restraint had significant impacts on intention to utilize e-Health, Uncertainty Avoidance, Collectivism, and Pragmatism had no significant impact on Intention to utilize e-Health in hospitals. Additionally, the results also show that perceived usefulness was a significant indicator of e-Health adoption decisions, whereas Perceived Ease of use was not an insignificant predictor of e-Health adoption.

Rho et al., (2014) study: The study develop a theoretical model for explaining the predictive factors affecting physicians' willingness to use telemedicine innovation to provide healthcare services. The model developed based on (TAM) with the inclusion of three predictive constructs from the previously published telemedicine literature: (1) accessibility of medical records and of patients as clinical factors, (2) self-efficacy as an individual factor and (3) perceived incentives as regulatory factors. A survey was conducted, and data collected from 183 physicians.

The outcomes confirmed the validity of the original TAM constructs: the PU of telemedicine directly affected the behavioral intention to use it, and the PEOU directly affected both the perceived usefulness and the behavioral intention to use it. Additionally, results in TAM variables show that: the system characteristic (accessibility of medical records of patients) directly impacted the perceived usefulness of telemedicine, self-efficacy and had a significant positive effect on both the PEOU and the PU of telemedicine, and perceived incentives were found to be important with respect to the intention to use telemedicine technology.

The study proves that the telemedicine Service Acceptance model was feasible and could explain the acceptance of telemedicine services by physicians South Korea.

Ahlan & Ahmad (2014) study: It investigated the nation of Health Information System and the factors that affect the user acceptance of the systems. HIT can be implemented in the form of Electronic Health Record (EHR), Electronic Medical Record (EMR), Computerized Physician Order Entry (CPOE), Clinical Decision Support System (CDSS), etc. or in some cases combination of two or more of the above. The study mentions that HIS system not widely available especially in developing countries, the research explores the health consumers' behavioral intention of using HIT. TAM was extended with additional variables from Health belief model, theory of planned behavior.

A questionnaire was used as a research instrument, which was developed based on the proposed model with additional antecedent and mediating variables on top of the three theories. The sample participants were 728 members from three Internet health portals in Korea. Web based survey was used to gather the data using structured self-administered questionnaire.

The results show that perceived threat, perceived usefulness, and perceived ease of use significantly affect health consumers' attitude and behavioral intention. Also, health status, health belief and concerns, subjective norm, HIT characteristics, and HIT self-efficacy had a strong indirect impact on attitude and behavioral intention through mediators of perceived threat, perceived usefulness, and perceived ease of use

Anja et al., (2014) study: The study investigated physicians' perceptions towards adopting a digital archive system, which is currently not used as originally intended by the IT-department. Based on the Unified Theory of Acceptance (UTAUT), and with the findings of an extensive review of the literature a research model has been developed. Mixed-approach is used for data gathering. To gain qualitative data, an interview with thirteen professionals (6 physicians and 7 nurses) has been conducted, while quantitative data gained through a questionnaire.

The results show performance and effort related outcome expectations, as well as facilitating conditions have been identified as the most relevant factors influencing physicians' adoption of a HIT system,

whereas physicians are only willing to adopt the system if they perceive that the system under investigation outweigh the efforts using it and is superior to established systems and methods. Further findings show, despite physicians report high computer self-efficacy, training sessions are necessary to increase their actual degree of system usage.

Mekawie (2013) study**:** In this study, the Unified Theory of Acceptance and Use of Technology (UTAUT) model was used as a foundation to investigate factors of technology acceptance in health care sector in Egypt. The research concluded that, online privacy, computer anxiety, online trust and internet experience & exposure are factors affecting e-Health acceptance.

Huang (2013) study: It investigated people's intention to use telecare technology, and assess the degree of influence that behavioral factors on users' acceptance of telecare in Taiwan. The Structural Equation Modeling (SEM) technique was used to analyze the forecasting TAM model applied to telecare. The outcomes show that the proposed model has good explanatory power for the behavioral intentions of using telecare. Additionally, the result show that among factors affecting the behavioral intentions of using telecare, the strongest factor is attitude, followed by the perceived usefulness, the perceived ease of use, subjective norms, and personal innovativeness, respectively.

Ortega Egea & Román González (2011) study: It explored physicians' acceptance, in terms of usage intentions, of a main component

of health information technology: electronic health care records system (EHCR). For this purpose, the original Technology Acceptance Model (TAM), which contain perceived usefulness, perceived ease of use, attitude towards usage, and usage intentions, is extended with trust and perceived risk related factors such as physicians' perceptions of organizational trust, perceived risk, and information integrity.

The outcomes emphasize the special importance of attitudinal factors (attitude towards the usage and perceived institutional trust) and cognitive instrumental processes (mainly, usefulness perceptions) in determining physicians' intention to use the systems. Perceptions of organizational trust, and perceived risk exerted strong direct influence on users' perceived usefulness, perceived ease of use, and attitude towards the use of systems. Additionally, trustfully mediated the influences of perceived risk and information integrity perceptions on physicians' adoption of IT systems.

Jung & Loria (2010) study: It aims to investigated older people's acceptance of e-Health services, in order to identify determinants of their intention to use the system. TAM was used as a conceptual guideline for data collection and as a general coding scheme. Additionally, in-depth exploratory interviews with twelve individuals over 45 years of age and of varying backgrounds are conducted.

The outcomes of the study supported the importance of usefulness and perceived ease of use of the e-Health service as the main determinants of people's intention to use the service. Additional critical factors are

identified, such as, individual's resistance to change (people are comfortable with doing things in the traditional way), lack of awareness about the system, and trust in the service provider. Also, most interviewees expressed positive attitudes towards using e-Health and find these services useful, and easy to use.

Aggelidis & Chatzoglou (2009) study: The paper mentioned that the use of information technology in the health care sector and especially in hospitals offers great potential for improving the quality of services provided and the efficiency of the personnel, also for reducing the managerial expenses. The major question that arises according to study is whether Greek hospital personnel are willing to use state of the art information technology while performing their jobs. The study addresses this issue by developing and testing a modified technology acceptance model, additionally, correlation, explanatory and confirmation factor analysis were performed to test the reliability and validity of the measurement model. The result shows that self-efficacy and social influence, perceived usefulness and anxiety, and facilitating conditions and social influence are the main factors detected in the study.

Luo et al., (2009) study: It aimed to identify the prevalence of short message system (SMS) and internet usage in patients visiting the Singapore Health clinics (network of 9 polyclinics provides primary healthcare services to the Singapore community) and to measure patients' acceptance of utilizing these technologies in healthcare service delivery.

The study introduced SMS as one of ICT tools, and point it is increasingly used in healthcare delivery worldwide, also facilitated and promoted communication, and exchange of information between patient and doctors or other health practitioners.

Data gathered from a representative sample of patients visiting the nine Singapore Health clinics. The questionnaire is used to collect data, it included five parts. The study showed that among 705 patients surveyed (mean age: 54.6 years, female: 50.6%, response rate: 92%), 407 (57.7%) were SMS users, and 158 (22.4%) were internet users. Two hundred and eighty-four of 412 SMS and/or internet users (40.3% of the entire sample) were comfortable with using those technologies in healthcare service delivery. It also showed main concerns associated with the use of SMS and internet in healthcare delivery were a preference for in-person consultation with a doctor (23.5%), decreased patient-doctor interaction (23.0%), and raised healthcare cost (20.8%).

Yu et al., (2009) study: The study applied a modified version of the extended technology acceptance model (TAM2) to explore the factors influencing the acceptance of health IT applications by caregivers in care facilities. Variables, including social influence factors such as subjective norm and image, were studied together with demographic variables, including age, job level, long-term care work experience and computer skills in regard to their impact on caregivers' acceptance of health IT applications.

To collect data, a questionnaire was developed based on the validated items from TAM2, a convenience sample was used. Confirmatory factor analysis and structural equation modeling techniques were used to validate our causal model.

Results show, perceived usefulness, perceived ease of use and computer skills had a significant positive impact, whereas image had a significant negative impact on user' intention to utilize health IT applications. Image, subjective norm and computer skills, system characteristic also indirectly impacted on intention during the mediating factor of ease of use. Ease of use, subjective norm and job level also determined perceived usefulness. The demographic factors including age and long-term care work experience didn't have any significant effect on users' acceptance of a health IT application. Their model explains 34% of caregivers' intention to utilize an introduced IT application before any hands-on experience with the system established.

The researchers concluded, that the planners and managers should ensure that a health IT innovation to be introduced into a long-term care facility is useful, effortless and easy to use. Manager’s efforts should be focused on forming a positive social norm for the introduction of the new innovation and improving users' computer skills. Securing the managers' and senior nurses' support for the innovation at the onset of the project is critical for success. Finally, the healthcare provider appears to dislike the idea of increased IT ability will elevate their status.

Wu et al., (2008) study: It introduced an extended technology acceptance model that integrates variables connoting management support and trust into the model to explore what determines acceptance of adverse event reporting systems by healthcare practitioners in Taiwan hospitals.

The proposed model was empirically examined using data collected from a survey in the hospital environment. 940 questionnaires were distributed to 144 hospitals implemented the system. The sample includes five level worked for hospitals in Taiwan, physicians, nurses, medical technicians, pharmacists and administration staffs.

The obtained data were tested for reliability and validity using confirmatory factor analysis. Both were analyzed using LISREL software. The model contained 17 items describing six latent constructs: perceived usefulness, perceived ease of use, management support, trust, subjective norm, and intention to use.

The outcomes show that perceived usefulness, perceived ease of use, subjective norm, and trust had a significant effect on a professional's intention to utilize the system. Among them, subjective norm had the most contribution. Perceived ease of use, and subjective norm also had a direct effect on perceived usefulness and trust, respectively. Additionally, the management support (training) had a direct effect on perceived usefulness, perceived ease of use, and subjective norm.

Lorig (2002) study: introduced the advantage of using the internet in improving the healthcare status and healthcare utilization for individuals

with chronic back pain. Also the research suggested that a simple, low-cost use of the internet may improve health status and lower health utilization for people with recurrent back pain.

The study used a randomized controlled trial e-mail discussion group, participants included 580 people from 49 states in USA with chronic back pain having at least one outpatient visit in the past year.

This research didn't find statistically significant that the use of the internet can lower healthcare utilization and get potential saving, and attributed the reason for this is that because of the high utilization patterns of people with recurrent back pain. The researcher of this study recommended continuing with other study with a replication group.

Chae et al., (2001) study: It explored the nation of telemedicine in home health services (HHS) for elderly patients. To collect data a sample of fifty patients were selected for the study. The study found that telemedicine was effective in terms of decreasing the number of clinic visits and achieving patient satisfaction. The average number of clinic visits per month was significantly reduced from 0.64 to 0.42 ($p<0.05$) after utilizing telemedicine. Above 72% of patients were satisfied with telemedicine, but only patient location showed a significant difference for patient satisfaction ($p<0.05$). Patients in their homes (82%) were more satisfied than patients in nursing homes (50%).

The provided medical consultation service (100%) was the most highly satisfactory services with telemedicine, followed by physical

therapy (83.3%). Although the satisfaction scores didn't indicate a significant difference in the system characteristics, the quality of verbal communication appeared to be a more important factor in influencing patient satisfaction than set-up time or quality of image. A computer-based patient record was developed to view a patient summary and to document meeting at the patient's home. The system is a low-cost approach that is easy to interface with a notebook computer; it can support various other HHSs.

Table (2-5) summarizes a general information about the studies related to e-Health systems research.

Table (2-5): Related Studies.

Author	Title	Country	Year
Mutula	Factors Influencing Perceptions and Attitudes of Nurses Towards the Use of ICT in Patient Care in Kwazulu Natal Province, South Africa	KwaZulu-Natal (KZN) province, South Africa	2015
Hoque & Bao	Cultural Influence on Adoption and Use of e-Health: Evidence in Bangladesh	Bangladesh	2015
Nuray et al.,	Technology Acceptance in Health Care: An Integrative Review of Predictive Factors and Intervention Programs	Turkey	2015
Abdekhoda et al.,	The effects of organizational contextual factors on physicians' attitude toward adoption of Electronic Medical Records	Tehran	2015
Khalifa & Alswailem	Hospital Information Systems (HIS) Acceptance and Satisfaction: A Case Study of a Tertiary Care Hospital	Saudi Arabia	2015
Rho et al.,	Predictive factors of telemedicine service acceptance and behavioral intention of physicians.	South Korea	2014

Author	Title	Country	Year
Ahlan & Ahmad	User Acceptance of Health Information Technology (HIT) in Developing Countries: A Conceptual Model	Korea	2014
Anja et al.,	Why Do They Resist? Examining the Salient Factors of Physicians ' It	Germeny	2014
Codagnone & Lupiañez-Villanueva	Benchmarking Deployment of eHealth among General Practitioners	European Union countries	2013
Mekawie	Factors Affecting Adoption of eHealth in Egypt	Egypt	2013
Huang	Innovative health care delivery system--a questionnaire survey to evaluate the influence of behavioral factors on individuals' acceptance of telecare.	Tiwan	2013
Ortega Egea & Román González	Explaining physicians' acceptance of EHCR systems: An extension of TAM with trust and risk factors	Spain	2011
Jung & Loria	Acceptance of Swedish E-Health Services	Swedish	2010
Aggelidis & Chatzoglou	Using a modified technology acceptance model in hospitals.	Greece	2009
Luo et al.,	Acceptance of Information and Communication Technologies for Healthcare Delivery	Singapore	2009
Yu et al.,	Health IT acceptance factors in long-term care facilities: a cross-sectional survey.	Canada	2009
Wu et al.,	Testing the technology acceptance model for evaluating healthcare professionals' intention to use an adverse event reporting system	Taiwan	2008
Lorig	Can a back pain email discussion group improve health status and lower healthcare costs?	USA	2002
Chae et al.,	Patient satisfaction with telemedicine in home health services for the elderly	Ireland	2001

2.6 Summary

This chapter discussed e-Health concepts, categories, benefits, challenges and related studies that are related to issue. It also introduce the factors influencing e-Health acceptance. These factors were derived from literature review and interviews with IT specialist.

After reviewing the previous literature and go in-depth in the research issue, the researcher sees that e-Health is a combination of technology and health activities and aims to enhance the quality of provided health services locally or remotely, by that, the researcher agreed with others researcher (Blaya, et al., 2010; Pagliari, 2005; Cashen, Dykes, & Gerber, 2004) and, internationals health institutions (eg: WHO, 2014; European Commission, 2012) are adopted in their definition to the term e-Health.

Also, the researcher agrees with (Khasawneh & Ibrahim, 2008; Blaya, et al., 2010) about the shortage in utilizing technology in health sector in developing countries due to some limitation such as: Lack of financial resources, poor ICT infrastructure and the absence of clear policies and regulations …etc, on the contrary of the situation in developed countries where e-Health becomes one of the necessities of the daily health lifestyle.

Implementing this technology has numerous advantages such as improving the quality, reducing the cost, speed up- the health services

delivering. Simultaneously, is surrounded with numerous challenges, these challenges may have related to human acceptance, IT infrastructure, technology itself and found Resources...etc.

Any new technology exposed to face problems, one of the main problems is related to end user acceptance. Many researchers such as (Holden & Karsh, 2010; Ortega Egea & Román González, 2011; Melas, Zampetakis, Dimopoulou, & Moustakis, 2011; Jung & Loria, 2010) mentions this problem in their research and tried to determine factors influence the end user behavior toward the IT.

There is a various models explaining individuals perception to adoption & utilize the technology. One of the most used model is TAM, which had been used in current research.

TAM is One of the most influential research models in studies of the determinants of IS and IT acceptance. It explain about 40%, in usage intentions, it also has been tested empirically and supported through validations, replications, and applications

Chapter Three

Methodology

Chapter Three
Methodology

This chapter focuses on the methodological procedures that were used in the research, and gives a description of the methods applied when carrying out the research.

Determining an appropriate research methodology is considered an important element in a research study. All methods used by a researcher during a research study are termed as research methods, which include the theoretical procedures, experimental studies, numerical schemes, and statistical approaches. They help the researcher in collecting samples and data of the research. A scientific research methods call for explanations based on collecting facts, measurements and observations and not on reasoning alone.

3.1 Research Methodology

The research methodology is a systematic way to solve a problem. It is a science of studying how research is to be carried out. It is the procedures by which researchers go about their work of describing, explaining and predicting phenomena (William, 2000).

Remenyi et al., (2003) described methodology as the "overall approach to a problem which could be put into practice in a research process, from the theoretical underpinning to the collection and analysis of data". On a similar note, Collis and Hussey (2009) agreed with them and identified methodology as the "overall approach to the entire process of the

research study". Research methodology, as per the above definitions is focused around the problems to be investigated in a research study and hence is varied according to the problems to be investigated.

3.2 Research Design

The research design illustrates the logical operation's flow of the research. It articulates what data is required, from whom, and how it is going to answer the research question. Also, it's not connected with any specific technique or method to collect data of any type (Kothari, 2004). The major goal of research design is to decrease the probability of building incorrect causal relationships between the study variables. Once the research design is completed, the actual work can be initiated (Jalil, 2013). Figure (3.1) shows research design stages.

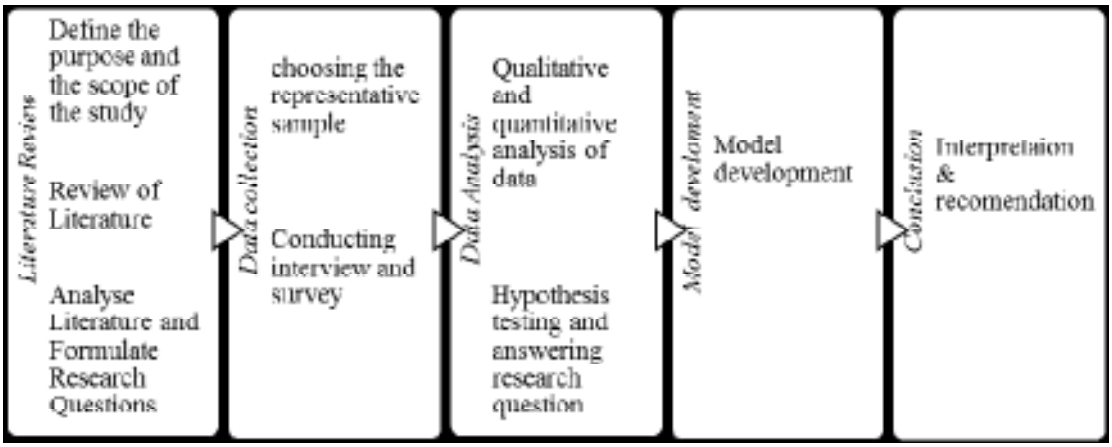

Figure (3.1): Research Design.

The study starts with setting the research objectives and question, then the researcher utilized the literature review and previous studies in order to better understand the research topic. Then an interview with experts was conducted in order to get better understanding e-Health system,

and then the researcher developed a questionnaire based on the available literature and the interviews outcomes. A pilot study was performed before the questionnaire distribution process, also validity and reliability test were made to ensure the quality of the questionnaire. After that, questionnaire were distributed and gathered, a statistical analysis was accomplished to perform final report and results using the SPSS software. Finally, the proposed framework were developed, which describe the impact of factors on e-Health system, depending on the research results and literature.

In order to decide the approach for this research, the researcher reviewed the different types of research shown in annex (A), which represents an inception material of scientific research for new researcher.

3.3 Research Date Collection Tools

There are different methods for data gathering when conducting research. The most common methods: questionnaires, interviews, observations, and tests. These tools must selected and constructed in the light of scientific bases; in order to gain access to the wanted data and thus fulfill the objectives of the research. The researcher might use a single research instrument or a combination of more than one instrument, depending on the nature of the research.

This study based on mixed research tools. The first was interviews to collect data from specialist at targeted hospitals and Ministry of health, so we can go in-deep into the study topic. The second tool was a questionnaire

to get quantified (numerical) results related to the factors influencing e-Health acceptance in targeted Palestinian hospitals, so we could answer the research questions and hypotheses.

3.3.1 The First Tool: Semi Structures Interviews

In this research, exploratory interviews were made with Palestinian IT specialists in target hospitals, Ministry of Health and some of users to explore e-Health adoption, assess the usage of e-Health in Palestine, and investigate the factors that affect e-Health adoption in the Palestinian health sector. The questions of exploratory interviews are mentioned in annex B.

The interview is one of the important methods used for observing and collecting data through conduct a purposeful discussion between the researcher and others participants in the research field. The matters raised are recorded (videotaped, audio-recorded or written down) and subsequently analyzed. When researcher exchange views with one or more participants by asking them general or closed questions and then recording their answers, this termed called qualitative interview and help the researcher to format a specific overview of research topic and the most important aspects related to it (Creswell, 2012). Interviews can involve one subject, or a group of subjects, but typically no more than 5 or 6 people in a group. A number of techniques including coding and thematic analysis can analyze the Qualitative data

Interviews are usually divided into three groups: structured, semi-structured, and unstructured interviews (Heppner et al., 2008).

- Structured interviews: the interviewer asks a set of clear and specific pre-determined questions that are asked to all interviewees in the same order.

- Unstructured interviews: also known as ‘in-depth interviews’ It looks like a daily conversation with no specific pre-defined set of questions, also, they are open ended and informal. The interviewer should have a clear idea about a topic or topics that they want to explore, also this type of interviews, allowing the interviewer to ask questions depending on the respondents' answers.

- Semi-structured interviews: it considered as a mix of both structured and unstructured interviews. The interviewer develop and use an 'interview guide' that contains a list of pre-defined questions and topics that need to be covered during the conversation. This type has some flexibility, where the interviewer can ask questions away from the guide, or may omit, change order or add additional questions when it is appropriate.

In this research, Semi-structured interviews were used because the researcher needs to hear about the research issue as much as possible with some restrictions. Furthermore, it allows informants the freedom to express their views in their own terms (Saunders et al, 2009).

Face-to-face meetings were conducted by IT specialist and some users in targeted research area. Furthermore, the number of interviews

conducted was with fifteen participants to collect the required information. In this case, it should be noted that face-to-face interviews needed a lot of time and effort.

3.3.2 The Second Tool: Questionnaire

Sekaran (2003) noted that the questionnaire as a pre-formulated written set of questions to which respondents' record their answers, usually through rather closely defined alternatives. Questionnaire often gathers quantitative data, but can also gather qualitative information through open-ended questions, and it can be done online, face-to-face or over the telephone. Surveys are very flexible and can be used to collect different types of data from small or large numbers of people. Additionally, the data collected through questionnaire needs to be analyzed to produce useful results. Quantitative data (numbers) are typically analyzed using statistical software like SPSS

In this research, the questionnaire is one of the main tools to collect the primary data. The items used to measure the research model (items used in the questionnaire) were based mostly on items used in measurements by TAM model and the interviews.

The questionnaire utilized to gather and acquire the primary data that will be analyzed to achieve the research goals. The questionnaire was designed into two languages (Arabic and English), the Arabic version to be distributed to participants because it is the native language in Palestine, and then translated it to the English version to be used in the research content.

Research questionnaire was adjusted three times before getting the final design, the first adjustment was upon the supervisor request, the second was upon to expert opinions, and third was because the results of a pilot study.

In addition, the researcher did a pilot study contain about 40 respondents from a three hospital in Nablus province hospital, also, many interviews conducted with employees work in the targeted hospitals to identify if the questionnaire is well understood or not, then the researcher calculates the reliability test of the questionnaire which was high and indicated that questionnaire statements were clear and understood for respondents.

The questionnaire consisted three main parts. This shown in (annex C)

- Part One: this part of questionnaire included a description of the research objective and importance. Also, this part assured participants of the confidentiality of the information, and encourage them to answer the questionnaire.

- Part Two: this part was put to collect demographic information about respondents which included (gender, age, years of experience, workplace, percentage of work completed by the system, frequency of using the system, and type of hospital).

- Part Three: this part consisted of (34) items constructed in close-ended statements designed based on the five- Likert scale (5= strongly agree, 4= agree, 3= neutral, 2= disagree, 1= strongly disagree). The items classified into eight areas, which represent the factors affecting e-Health system.

3.4 Research Hypotheses and Framework

Based on previous discussion, theories, model, and exploratory interviews, we managed to identify the most important factors that Influence E-Health adoption. These factors include: TAM, integrated with other factors, which are system characteristic, training, fear of accountability, perceived risk, culture, and output quality.

The proposed framework is primary consists of TAM factors integrated with the factors which mentioned above is shown in Figure (3.2). The following diagram explains the general framework of the research:

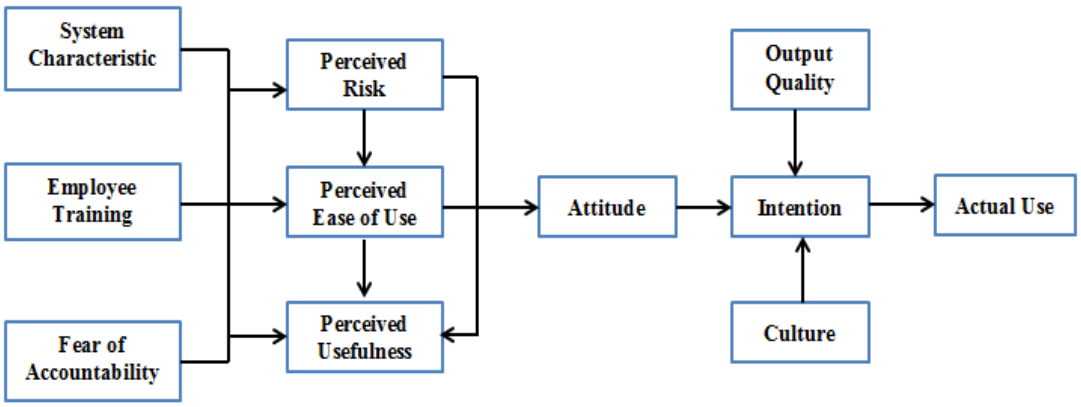

Figure (3.2): Research General Framework for e-Health Acceptance.

According to the literature review and the above proposed model, the following hypotheses was developed to achieve research objectives:

1. System characteristic has direct and positive effect on perceived risk of e-Health system.

2. Employee training has direct and positive effect on perceived risk of e-Health system.

3. Fear of accountability has direct and positive effect on perceived risk of e-Health system.

4. System characteristic has direct and positive effect on perceived ease of use of the e - health system.

5. Employee training has direct and positive effect on perceived ease of use of the e - health system.

6. Fear of accountability has direct and positive effect on perceived ease of use of the e - health system.

7. System characteristic has direct and positive effect on the perceived usefulness of e-Health system.

8. Fear of accountability has direct and positive effect on the perceived usefulness of e-Health system.

9. Perceived risk has direct and positive effect on the perceived usefulness of e-Health system.

10. Perceived risk has direct and positive effect on perceived ease of use of the e-Health system.

11. Output quality has a positive influence on intention to use e-Health system.

12. Culture has a positive influence on intention to use e-Health system.

13. Employee training has direct and positive effect on the perceived usefulness of e-Health system.

3.5 Sampling Technique

Researchers are interested in how they will choose research samples, so, it is important to determine the methods that suit with research purposes, then define research population and sample size.

3.5.1 Population of the Study

Sekaran (2003) defines the population as the group of people or things of interest under examination by the researcher. In this research, the population was the health sector workforce in West Bank. According to the Palestinian ministry of health report, the number of the workers who have a permanent position was (30,080) employed, (19,011) of them working in West Bank, and (11,069) in Gaza (MOH, 2015).

Palestinian Ministry of Health is one of the largest operator of human force working in the health sector in the Palestinian territories; in 2014 the number of workforce in the Palestinian Ministry of Health amounted to 13,975 employees on a permanent basis; of whom 7.032 (50.3%) employees working in the West Bank, and 6. 943 (49.7%) employees in the Gaza Strip.

The number of medical personnel assigned to different medical occupation is (8.916) person; of whom 4.986 (55.9%) employees working in the West Bank; and 3.930 (44.1%) employees in the Gaza Strip, additionally, to 5.058 of employees working in the field of administration and services; of whom 2.046 (40.5%) employees working in the West Bank; and 3.012 (59.5%) employees in the Gaza Strip (MOH, 2015).

3.5.2 Population Sampling

Nablus governorate hospital were targeted as a case study and focused on the medical staff whose nature of work was either, doctors, radiologist technician, laboratory technician, nursing, or pharmaceutical. The research covered three hospitals, which are properly implementing e-Health system. Table (3-1) show the size of targeted hospitals employees.

Table (3-1): Size of Targeted Hospitals Employees

Hospital name	Number of Targeted Employee
A-Najah National University Hospital	447
Rafidia Hospital	700
Specialized Arab Hospital	250
Total	**1397**

Source: Hospitals HR Department.

Research sample size should fit with appropriate confidence level, and appropriate confidence interval. Therefore, the confidence interval will be 5% with 95% confidence level. The total size of the employee in the targeted hospital is 1397. The researcher used an internet web site to help him in determining the acceptance sample size, which is (300) participants.

Here is the formula used in our Sample Size Calculator according to the web site (Cochran, 1963). Sample Size:

$$n = \frac{Z^2 pq}{e^2}$$

Where:

n = the sample size.

Z = Z value (e.g. 1.96 for 95% confidence level).

p = percentage picking a choice, expressed as decimal (0.5 used for sample size needed) and q = (1- p).

e = confidence interval.

3.6 Distribution of the Questionnaire

Stratified random sampling were adopted to collect the data from the Palestinian hospital, located in Nablus governorate. Stratified sampling refers to a type of sampling method, which divides the population into separate groups, called strata, then; a probability sample (often a simple random sample) is drawn from each group.

Stratified sampling has several advantages over simple random sampling. For example, using stratified sampling, it may be possible to reduce the sample size required to achieve a given precision, or it may be possible to increase the precision with the same sample size.

Table (3-2) shows how the questionnaires were distributed throughout the targeted hospital. As well, it shows as all details about data collection and the percentage of response rate.

Table (3-2): Distribution and Collection of Data

NO	Hospital name	NO. Of Surveyed	Distributed Surveyed	Surveys Received	Valid Surveys	Response Rate
1	A-Najah National University Hospital	96	120	111	96	80%
2	Rafidia Hospital	150	170	156	150	88.2%
3	Specialized Arab Hospital	54	70	61	54	77.1%
Total		**300**	**360**	**328**	**300**	**83.3%**

3.7 Test of Data Validity and Reliability

We seek to make research questionnaire consistent, clear, and understandable by all. In addition, the questionnaire should achieve its goals. Therefore, reliability and validity should be measured.

3.7.1 Test of Validity

Validity refers to how well a test measures what it is purported to measure. According to Sekaran and Bougie (2010) validity is a test instrument that concerned with how well a developed instrument measures what the researcher intend to measure. Additionally, when the researcher use content validity methods usually he/she go to a board of experts or judges in order to have them identifying whether the questions are valid.

In this research, the reviewed literature formed the references of questionnaire statements. Additionally, the conducted interviews extracted

many ideas that contained in the questionnaire, and then the questionnaire were reviewed and discussed it with the supervisor to ensure the accuracy of questionnaire questions. The questionnaire also sent to several experts and arbitrators to get their opinions and recommendations, and discuss repeated questions, charity of the questions, the order of the questions, and if the question are directed the participants towered a specific alternative. See annex (D), Table (1).

3.7.2 Test of Reliability

Reliability indicates that the scores yield from an instrument are consistent and stable. In other words, it's the degree to which an assessment tool produces stable and consistent outcomes (Saunders et al. 2009).

To ensure the reliability of the research questionnaire, the researcher used Cronbach coefficient alpha technique which is one of the most popular reliability statistics is used today that determines the internal consistency or average correlation of items in a survey instrument to examine its reliability (Reynaldo, & Santos, 1999).

Table (3-3) shows that the results of the Cronbach alpha test are (85%) and the entire questionnaire variables are above 70% thus it is acceptable. Therefore, the questionnaire is reliable and could be redistributed.

Table (3-3): Cronbach Alpha Test

NO.	Factors	No. Of Statements	Cronbach Alpha
1	System Characteristics	4	67%
2	Training	3	69%
3	Fair of Accountability	5	64%
4	Perceive Risk	5	65%
5	Perceive Usefulness	3	71%
6	Ease of Use	5	85%
7	Output Quality	5	85%
8	Culture	4	79%
Total			**85%**

3.8 Data Analysis Technique

This section includes describing the process for analyzing the interviews as well as the process of questionnaire analysis. Again, qualitative and quantitative methods of analysis were the primary approaches of analysis.

3.8.1 Interviews Technique

Semi-structured interviews were made to collect further information about the research topic from the viewpoint of Palestinian specialists. The process of interviewing analysis starts with listening and reviewing the audio recording and take notes during the interviews, with the permission of the interviewee, and then transcribing them manually in order to prepare for the following analysis step.

The Qualitative data resulted from the interviews were analyzed by the ‘thematic analysis’ approach. According to Priest et al., (2002) the thematic analysis is defined as flexible and simple technique that enables a researcher to generate new ideas by identifying, analyzing, and reporting

patterns (themes) within the data. Thematic analysis is considered the simplest technique for categorizing qualitative data.

According to Braun and Clarke (2006) thematic analysis has six phases:

- Phase 1: becoming familiar with the data through reading and re-reading it several times.
- Phase 2: generating an initial list of items from the data set that have a reoccurring pattern.
- Phase 3: collecting the similar codes in themes that describe the data accurately.
- Phase 4: reviewing themes to make sure they support the research.
- Phase 5: defining and naming themes.
- Phase 6: producing and writing the final Report.

3.8.2 Statistical Technique

Quantitative data analysis gives the researcher numerical and quantifiable results that can be easily interpreted and understood. Regarding to this study, the data collected using a questionnaire instrument has been analyzed using the Statistical Package for the Social Sciences (SPSS) software (Greasley, 2008).

SPSS version 20 was used for analyzing data. The following statistical methods are used:

1. Frequencies, Percentage, Mean, and Standards Deviation tables: this method was performed to describe the research sample.
2. Independent Samples T Test: to test if there are statistical differences between means of two variables.
3. One- Way ANOVA Tests: to test if there are statistical differences between means of three variables or more.
4. LSD Post Hoc Test: to specify the differences between means.
5. Person Correlation Coefficient: to test the correlation between the research factors.
6. Cronbach's Alpha: to test the reliability of the questionnaire.

3.9 Summary

This empirical study has two parts: the first is seeking for exploring the status of e-Health in targeted Palestinian hospitals, to achieve this purpose a qualitative approach within an interview strategy has been conducted. The second part is seeking to determine the factors affecting e-Health acceptance by hospitals medical practitioners, to achieve this purpose a general framework were designed, a hypothesis were developed, and a quantitative approach within a survey strategy has been conducted.

Chapter Four

Data Analysis, Results and Discussion

Chapter Four
Data Analysis, Results and Discussion

This chapter analyzes and presents the results of the qualitative and quantitative data collected from interviews and questionnaires. It explores the e-Health from the viewpoint of interviewees in target area. Thereafter, it shows the results of descriptive statistics and hypotheses testing derived from the Statistical Package for Social Science (SPSS) software, in order to determine the factors that affecting e-Health system acceptance in Palestinian hospitals according to the proposed framework. Furthermore, this chapter presents e-Health adoption framework using the factors that have been obtained.

4.1 Descriptive Analysis

In order to obtain the research results, SPSS software was used to analyze the questionnaires.

According to the questionnaire design, respondents have different demographic information; these differences introduce different responses toward e-Health system usage, and the factors that influence e-Health adoption within different healthcare centers and hospitals. The following results show these differences.

- **Demographic Information**

The total number of participants from the three hospital in Nablus city was 300, with response rate 83%. The following description present the characteristics of the participants.

- **Gender**

According to Table (4-1), the sample included 185 male who form 61.7% of the participants, and 115 female who form 38.3% of the

Table (4-1): Distribution of Gender.

Variable	Characteristics of the Variable	Frequencies	Percentage
Gender	Male	185	61.7%
	Female	115	38.3%
	Total	**300**	**100%**

This result corresponds to what is indicated by the statistics of the Ministry of Health (MOH) in 2013, which showed that the ratio of males to females- who were hired in the Palestinian hospitals- is 63% to 37% (Abu Zeinah., 2013). This explains the small percentage of respondents from female healthcare workforce compared with male healthcare workforce in hospitals.

Furthermore, the documents of Human resource department (2016) in the targeted hospitals showed that the ratio of males -who were hired in these hospitals-, is higher than females.

- **Age**

Age was divided into four intervals. Table (4-2) shows the details of the participants age.

Table (4-2): Distribution of Age.

Variable	Characteristics of the Variable	Frequencies	Percentage
Age	21- 30 years	210	70%
	31- 40 years	57	19%
	41- 50 years	25	8.3%
	More than 50 years	8	2.7%
	Total	**300**	**100%**

Results show that the highest percentage of respondents aged (21-30) is young which form 70% of respondents. These percentages is because the workforce in hospitals is in young age according to HRD (2016). Here we mention that the workforce in Palestinian society is in young age, which form more than 61.4% of total workforce (PCBS, 2016).

- **Experience Years**

Experience years was divided into four period intervals. Table (4-3) shows the details of the participants work experience years.

Table (4-3): Distribution of Experience Years.

Variable	Characteristics of the Variable	Frequencies	Percentage
Experience Years	1- 5 years	192	64%
	6- 10 years	53	17.7%
	11- 15 years	30	10%
	More than 15 years	25	8.3%
	Total	**300**	**100%**

The highest percentage of respondents is in (1-5 years) work experience. Health sector witnesses' improvement in the medical and educational aspects, and increasing demands for better health services. These required opening new health centers such as: An-Najah hospitals; which created a need to attract and employ a complete medical staff with multi-disciplinary. This percentage is compatible with the percentage of participants who aged (21-30), those who are with (1-5) years' work experience or newly employed with fresh experience.

- **Job**

The job was divided into five intervals. Table (4-4), shows the job distribution in this research.

Table (4-4): Distribution of Job

Variable	Characteristics of the Variable	Frequencies	Percentage
Job	Doctor	77	25.7%
	Pharmacist	19	6.3%
	Nurse	148	49.3%
	Laboratory Technician	37	12.3%
	Radiologist	19	6.3%
	Total	**300**	**100%**

The highest percentage of respondents is nurses who form 49.3% of respondents, followed by Physician (25.7%). This is because nurses constitute the largest proportion of medical staff. (Appendix E: Table 1) shows the numbers of nurses in each targeted hospital.

Furthermore, according to PCBS (2014), there were (11,633) nurses registered in Palestine in 2012, which is the highest number compared with the other jobs title, and then followed by physician (8.810).

- **Completed Work by Using e-Health System**

The Percentage of work completed by using e-Health system was divided into five intervals. Table (4-5), shows the details of the participants completed works percentage.

Table (4-5): Distribution of completed Work.

Variable	Characteristics of the Variable	Frequencies	Percentage
Completed Work	100%- 80%	167	55.7%
	79%- 60%	84	28%
	59%- 40%	30	10%
	39%- 20%	16	5.3%
	Other	3	1%
	Total	**300**	**100%**

The results show that respondents -who complete (100%-80%) of work by using the system and computer- form 55.7% of respondents. This percentage can be attributed to the sensitive nature of tasks they perform, which depend totally on using the technology not the traditional technique & papers. This percentage compatible with the next percentage of system usage to complete work.

- **System Usage**

System usage was divided into three intervals. Table (5-6), shows the details of the participants system usage.

Table (4-6): Distribution of System Usage.

Variable	Characteristics of the Variable	Frequencies	Percentage
System Usage	Daily	235	78.3%
	Almost daily	50	16.7%
	Intermittently	15	5%
	Total	**300**	**100%**

Results show that the highest percentage of respondents according to system usage is daily, and form 78.3% of respondents. This percentage revealed the importance & usefulness of the system in performing work. Here we mention the using the system is also mandatory in health process.

- **Work Place**

The sample included 150 Participants work in private hospitals who form 50% of the participants, and 150 participants work in governmental hospitals who form 50% of the participants. Table (4-7) shows the work place distribution in this research.

Table (4-7): Distribution of Work Place.

Variable	Characteristics of the Variable	Frequencies	Percentage
Work Place	Private hospital	150	50%
	Governmental hospital	150	50%
	Total	**300**	**100%**

This result were expected; because Rafidia hospital is the largest one in terms of the number of workforce, which is seven hundred, according to HRD (2016). Therefore, we distributed the highest number of questionnaires in Rafidia governmental hospital. Here we mention that the total number of respondents from private hospitals equals the respondents in public hospital, which forms (50%).

The results of analyzing demographic information data illustrate the following facts:

1. The highest percentage of participants is males who form 62% of respondents.

2. The highest percentage of participants is young aged (21 – 30 years old) who form 70% of respondents.

3. The highest percentage of participants in work experience field is (1-5 years), and their percentage in participation is 64%.

4. The highest percentage of participants in job title field is nurse, and their percentage in participation is 49.3%.

5. The highest percentage of participants in completed work by using e-Health field is (100% - 80%), and their percentage in participation is 55.7%.

6. The highest percentage of participants in system usage field is daily, and their percentage in participation is 78.3%.

7. The percentage of participants who work in government hospital is equal to the participants who work in private hospital in this research.

4.2 Statistical Differences among Survey Respondents

This section outlines the statistical differences between participants according to received data. Independent Samples Test (t-test for Equality of Means) and one-way ANOVA Test were used to explain these differences; these two tests were used because correlations between qualitative and quantitative factors were tested.

T-test method compares means of qualitative independent variable having two levels, whereas one-way ANOVA compares means of qualitative independent variable which having more than two levels. In this case, the dependent variables are quantitative.

- **Statistical Differences According to Gender**

Gender variable has two levels so T-test method is used. Statistical differences between males and females show that there is no statistical differences between males and females is recognizing in all factors where (P > 0.05) for all. Tables (4-8), (4-9) shows full details about this results:

Table (4-8): Statistical Differences among Participants According to their Gender

Factors	Gender	N	Mean	Std. Deviation
System Characteristics	Male	185	3.78	.750
	Female	115	3.67	.658
Training	Male	185	3.75	.744
	Female	115	3.70	.728
Fear of Accountability	Male	185	3.77	.586
	Female	115	3.72	.509
Perceived Risk	Male	185	3.95	.576
	Female	115	3.89	.558
Perceived Usefulness	Male	185	4.09	1.059
	Female	115	4.09	.581
Ease of Use	Male	185	3.95	.747
	Female	115	4.02	.603
Intention	Male	185	3.61	.760
	Female	115	3.59	.633
Output Quality	Male	185	3.92	.693
	Female	115	3.94	.570
Culture	Male	185	3.36	.873
	Female	115	3.19	.720
Total Score	Male	185	3.82	.498
	Female	115	3.79	.408

Table (4-9): Independent Samples Test for Gender Differences among Participants

Factors	t-test for Equality of Means		
	T	Df	Sig. (2-tailed)
System Characteristics	1.237	298	.217
Training	.516	298	.606
Fear of Accountability	.852	298	.395
Perceived Risk	.908	298	.365
Perceived Usefulness	.002	298	.998
Ease of Use	-.907	298	.365
Intention	.218	298	.828
Output Quality	-.336	298	.737
Culture	1.818	298	.070
Total Score	.625	298	.532

- **Statistical Differences According to Age**

One-way ANOVA test was used to determine the correlation between participant age and other dependent variables. Statistical differences between age intervals shows that there is no statistical differences between them is recognizing in all factors where ($P > 0.05$) for all. This result is shown in (Annex E: Table 2- Table 3).

- **Statistical Differences According to Experience Years**

One-way ANOVA test were used to determine the correlation between participant experience years and other dependent variables. Statistical differences between experience years intervals shows that there is no statistical differences between them is recognizing in all factors where ($P > 0.05$) for all. This result is shown in (Annex E: Table 4- Table 5).

- **Statistical Differences According to Job**

One-way ANOVA test were used to outline the statistical differences between participants according to their job, this research includes five different categories of job related to e-Health system in the hospitals. Then LSD test used to detect where exactly the mean differences lie (Appendix E: Table 6 – Table 15). There are statistical differences between participants' jobs as the following:

System characteristics: ANOVA test shows statistical differences between the participants according to their job ($P < .05$). Nurses are more perceived about the system characteristics and consider system characteristic importance in e-Health technology acceptance (mean equals 3.88) more than doctors (mean equals 3.56), whereas pharmacists have the lowest perceived toward system characteristics of e-Health system (mean equals 3.47).

Training: ANOVA test shows statistical differences between the participants according to their job ($P < .05$). Nurses are more perceived about the training benefits to use e-Health system, nurses believe that training they received, could mitigate them invoke passive reaction toward the system (mean equals 3.87) than laboratory technicians (mean equals 3.81), whereas doctors have the lowest perceived toward training benefits (mean equals 3.47).

Fear of accountability: ANOVA test shows statistical differences between the participants according to their job ($P < .05$). Nurses have the highest

perceived toward fear of accountability when using e-Health system (mean equals 3.88), but doctors have the lowest perceived toward fear of accountability (mean equals 3.54).

Perceived risk: ANOVA test shows statistical differences between the participants according to their job (P <.05). Nurses are realizing the effects of perceived risk in e-Health technology acceptance more than Doctors (mean equals 4.02) the doctors (mean equals 3.83), whereas pharmacists have the lowest perceived risk toward e-Health system (mean equals 3.69).

Usefulness: ANOVA test shows statistical differences between the participants according to their job (P <.05). Nurses have the highest perceived usefulness of e-Health system and consider it useful (mean equals 4.25), but doctors have the lowest perceived usefulness toward e-Health (mean equals 3.87).

Ease of use: ANOVA test shows statistical differences between the participants according to their job (P <.05). Laboratory technicians are more perceived about the ease of use e-Health system and facilitate work tasks and responsibilities (mean equals 4.08) than Nurses (mean equals 3.07), whereas doctors have the lowest perceived ease of use toward e-Health system (mean equals 3.77).

Output quality: ANOVA test shows statistical differences between the participants according to their job (P <.05). Nurses have the highest perceived toward output quality when using e-Health system and believe that by using e-Health they will performs their tasks well (mean equals

4.06), but laboratory technicians have the lowest perceived output quality toward e-Health (mean equals 3.54).

Also, LSD test shows a significant difference between nurses' participants (mean 4.06) and doctors, and pharmacists (mean respectively 3.73, 3.54), and between pharmacists (mean 3.54) and laboratory technicians, and radiologist (mean respectively 3.99, 3.95), and between doctors (mean 3.73) and laboratory technicians (mean 3.99), which illustrate that nursed, laboratory technicians, and radiologist have better perceived for the output quality of e-Health system.

Culture: ANOVA test shows statistical differences between the participants according to their job ($P < .05$). Nurses have the highest perceived toward the impact of culture to use e-Health system (mean equals 3.19), but radiologist have the lowest perceived toward culture (mean equals 2.54).

Also, LSD test shows a significant difference between nurses participants (mean 3.19) and doctors, pharmacists, and radiologist (mean respectively 2.75, 2.75, 2.54), which illustrate that nurse have better perceived toward the impact of culture to use e-Health system.

The results of statistical differences between participants according to job title superiority appear in perception in favor of nurses in most factors that affect e-Health acceptance by practitioners, especially those related to the system characteristics, training, fear of accountability, perceived risk, output quality, and cultural factors.

Nurses are interested in the system because they feel it is easy to use, reduces the time of patient care, improves the quality of work output, and it is user-friendly. Nurses have full confidentiality in e-Health system, since they are well trained in this field, they were also the first to use the system for a long time. Moreover, the system smoothed the work since they get direct orders from both doctors and management, it also mitigates the pressure they face during performing tasks, so it's well accepted.

On the contrary, doctors are less accepting the system because they felt the burden of work increases when using it. Also, the time to undertake it exceeds the amount of time required for paper charting. This can be attributed to insufficient training they got which give them an impression that the system is difficult to use and needs effort, which -by default- affects negatively on perceived usefulness. Additionally, because doctors are not strongly engaged to the system they will not feel fear when making medical mistakes.

- **Statistical Differences According to Completed Work by Using e-Health System**

In this study participants' percentage of work completed by using e-Health system collected as interval, completed work classified into more than two alternative, therefore the researcher used One-way ANOVA test to check the correlation between completed work intervals and other variables. Then the researcher used LSD test to detect where exactly the

mean differences lie (Annex E: Table 16 – Table 19). There are statistical differences between participants completed works as the following:

Ease of use: ANOVA test shows statistical differences between the participants according to their completed works (P <.05). Participants who completed (39% - 20%) of their work by using e- Health system have lowest perceived ease of used toward e-Health system (mean equals 3.39) compared with these who completed (100% - 80%), (79% - 60%), and (59% - 40%) of their works (mean respectively 4.05, 3.98, 3.91).

Output quality: ANOVA test shows statistical differences between the participants according to their completed works (P <.05). Participants who completed (39% - 20%) of their work by using e- Health system have lowest perceived output quality of delivering health services by e-Health system (mean equals 3.48) compared with these who completed (100% - 80%) and (79% - 60%) of their works by using the system (mean respectively 3.97, 3.98).

The results indicate that the participants who completed (39%-20%) of work by using the technology have the lowest belief that e-Health system is applicable to their job and help to performs their tasks well. This can be attributed to the shortage of using computers, which gives impression that the system isn't free of effort and difficult to use, or they are not enough familiar with emerging technology and felt that e-Health has become a burden. Moreover, those participants will not catch its benefits.

This is contrary to the impression of respondents who completed (100% -80%) of work by using the system, those felt that the system is effortless. This result can be due to the nature of tasks they perform, which depends totally on technology. Participants in this category have a good computer skills & experience through either more training or using the system for a long time. This will enable them to use the system in care processes without any difficulties, also to touch the improvement in work output quality by using the technology.

- **Statistical Differences According to System Usage**

In this study e-Health system usage by participants who work in Palestinian target hospital collected via three different categories, this variable classified into more than two alternative, therefore the researcher used One-way ANOVA test to check the correlation between system usage categories and other variables. Then the researcher used LSD test to detect where exactly the mean differences lie (Annex E: Table 20 – Table 22). There are statistical differences between participants completed works as the following:

Training: ANOVA test shows statistical differences between the participants according to their system usage ($P < .05$). Participants who used e-Health system daily have the highest perceived toward the benefits of training to use e-Health system in the best way (mean equals 3.78), but the participants who used e-Health system Intermittently have the lowest

perceived toward the benefits of training to use e-Health system (mean 3.27).

According to results, participants who used e-Health system daily have the highest believe that they have been well- trained without any invoking passive reaction; they also have the ability to perform a specific task using a computer. Therefore, they realized the extent of management's commitment to the implementation of all forms of medical care that supported by emerging technologies, and they hold the e-Health functionality which they considered tangible and observable.

Using the system daily can be attributed to the users believe that e-Health performs their tasks well, more applicable to their job, increases their performance, raises the efficiency of the health process, and enhance their status more than practitioners who use the system intermittently.

This category user believe that the more training the more desire to use the system. Hence, individuals experience and knowledge in employing and using the technology made them able to touch e-Health benefits and quality based on the effectiveness of its functions and interactions. Therefore, this will positively affect their intention to more e-Health technology acceptance.

Using the system intermittently can be attributed to the nature of the performed tasks, which may depend on using both technology and papers; hence, those users do not have strong contact with the system. In addition,

poor or insufficient training they got, may prevent touching the impact of training on increasing system adoption.

- **Statistical Differences According to Work Place**

T-test method were used to explore the statistical differences between the two levels of work place variables (Appendix E: Table 22 – Table 23). Statistical differences between governmental and private hospitals show that there is statistical differences between both is recognizing system characteristic and usefulness factors where (P > 0.05) as following:

System characteristics: there are statistical differences between participants according to the natural of place in which they work (P <.05). Participants who work in governmental hospitals perceived that the characteristics of e-Health system will increase their status more than participants work in private hospitals (mean of governmental hospitals is 3.83 and private hospital is 3.64).

Usefulness: there are statistical differences between participants according to the natural of place in which they work (P <.05). Participants who work in governmental hospitals consider e-Health system to be useful more than participants work in private hospitals (mean of governmental hospitals is 4.23 and private hospital is 3.95).

The results of statistical differences between hospitals superiority appear in perception in favor of Rafidia surgical governmental hospital in

most factors that affect e-Health acceptance by practitioners, especially those related to the usefulness and benefits of the system and the powerful system characteristics.

On one hand, the public hospital participant has a belief that e-Health is applicable to their job and helps performing their tasks better, reduces the work pressure and improves the quality of delivering health services by reducing the human and medical errors. Furthermore, it is interested in implementing e-Health system with powerful characteristic, clear features, user-friendly, easy to use, compatible with the work, maintaining user privacy and security, and protected with a strong firewall, to increase the system trust, which in its role increases intention to use. These results describe the explicit of governmental hospitals attitude towards using technology dramatically and illustrate a clear evolution of the governmental hospitals' sector in Palestinian hospitals.

On the other hand, Participants in private hospitals have lower perceived system usefulness and less trust in the powerful system characteristic. This can be attributed to weakness or complexity in system design, which makes it for example: exposed to malware, hacking, and repeated system failure, the system’s also interface could be unclear or it is not compatible with work. This reduces user motivation to merge this innovation in daily work, thus not touching its benefits.

The following points summarize the most important results that have been discussed above:

1. There is no differences between males and females about the factors related to the acceptance of e-Health systems.

2. There is no relationship between participants' ages and the degree of the acceptance of e-Health systems.

3. There is no relationship between participants' experience years and the degree of the acceptance of e-Health systems.

4. Nurses are most interested about e-Health system, because they have the highest degree about powerful system characteristics, training, fear of accountability, perceived risk, output quality, and the culture factors, while laboratory technicians have the highest degree about perceived ease of use more than other job classifications.

5. The participants, who completed work by using e-Health system is low, have lowest degree about perceived ease of use and output quality of the system.

6. Participants who used e-Health system daily have the highest percentage toward the benefits of training to use e-Health system in the correct way.

7. Participants who work in governmental hospital consider e-Health system more useful and have powerful system characteristics more than participants who work in private hospitals.

4.3 E-Health System Factors Testing

In order to answer the second question: which factors have strong or weak effect on acceptance? The differences between factors which affecting the acceptance of e-Health system were investigated, the results of respondents show some differences about these factors, table (4-10) illustrate that.

Table (4-10): Total Score for all Factors According to Research Respondents.

Factors	Mean	Standard deviation	Percentage
System Characteristics	3.74	.717	74.8%
Training	3.73	.737	74.6%
Fear of Accountability	3.75	.558	75%
Perceived Risk	3.93	.569	78.6%
Perceived Usefulness	4.09	.905	81.8%
Ease of Use	3.97	.695	79.4%
Intention	3.60	.713	72%
Output Quality	3.93	.648	78.6%
Culture	3.29	.821	65.8%
Total Score	3.81	.465	76.2%

The table shows the following results:

1. The highest factor affect the acceptance of e-Health system is perceive usefulness, the results show that 81.8% of the respondents recognize that perceived usefulness could increase user acceptance of these systems.

2. Perceived ease of use, perceived risk, and output quality factors affect the acceptance of e-Health system in high degree compared with the other factors.

3. The lowest factor affect acceptance of e-Health system is culture, the results show that 65.8% of the respondents recognize that culture can increase user acceptance of e-Health systems.

4. The results explain the total score for all factors selected in this study that 76.2% of the respondents agree about the effect of these factors on user acceptance of e-Health systems.

4.4 Hypotheses Testing

In this study to test the research hypotheses Pearson Correlation was used. Pearson Correlation test is fit with the research purpose where one dependent factors affected by one independent hypothesized factor. Table (4-11) show the hypotheses and their testing results.

Table (4-11): Results of Hypothesis Testing

No.	Hypotheses	R^2	Pearson Correlation	Type of Correlation	Sig.
H1	System characteristic has direct and positive effect on perceived risk of e-Health system.	.192	.438**	positive	.000
H2	Employees training has direct and positive effect on perceived risk of e-Health system.	.163	.404**	positive	.001
H3	Fear of accountability has direct and positive effect on perceived risk of e-Health system.	.235	.199**	positive	.000
H4	System characteristic has direct and positive effect on perceived ease of use of e-Health system.	.398	.631**	positive	.000
H5	Employees training has direct and positive effect on perceived ease of use of e-Health system.	.274	.524**	positive	.000
H6	Fear of accountability has direct and positive effect on perceived ease of use of e-Health system.	.273	.522**	positive	.000
H7	System characteristic has direct and positive effect on perceived usefulness of e-Health system.	.260	.522**	positive	.000
H8	Employees training has direct and positive effect on perceived usefulness of e-Health system.	.157	.396**	positive	.000
H9	Fear of accountability has direct and positive effect on perceived usefulness of e-Health system.	.195	.442**	positive	.000
H10	Perceived risk has direct and positive effect on perceived usefulness of e-Health system.	.073	.269**	positive	.000
H11	Perceived risk has direct and positive effect on perceived ease of use of e-Health system.	.276	.526**	positive	.000
H12	Output quality has positive influence on intention to use e-Health system.	.041	.203**	positive	.000
H13	Culture has positive influence on intention to use e-Health system.	.008	.089	positive	.122

**** Correlation is significant at the.01 level (2-tailed).**

According to the table, (4.11), all hypotheses are significant at 99% except H13. These hypotheses are derived from the previous literature review and conducted interviews, so the results supporting TAM model and empirical studies that discussed in chapter two, the following description show the relationship between all factors according to the hypotheses:

- **System Characteristics Discussion**

The results of Pearson Correlation of hypotheses show that system characteristics is jointly predicted by training ($\rho = 0.549$, $P < 0.00$), fear of accountability ($\rho = 0.615$, $P < 0.00$), perceived risk($\rho = 0.438$, $P < 0.00$), perceived usefulness ($\rho = 0.510$, $P < 0.00$), ease of use ($\rho = 0.631$, $P < 0.00$), intention ($\rho = 0.138$, $P < 0.01$), and output quality ($\rho = 0.627$, $P < 0.00$).

Perceived risk to use e-Health system has a strong relationship with system characteristics which is significant at 99% ($\rho = 0.438$). Hence, **Hypothesis 1 is supported.**

Perceived ease of use e-Health system has a strong relationship with system characteristics which is significant at 99% ($\rho = 0.631$). Hence, **Hypothesis 4 is supported.**

Perceived usefulness from using e-Health system has a strong relationship with system characteristics which is significant at 99% ($\rho = 0.510$). Hence, **Hypothesis 7 is supported.**

- **Training Discussion**

The results of Pearson Correlation of hypotheses show that training is jointly predicted by system characteristics ($\rho = 0.549$, $P < 0.00$), fear of accountability ($\rho = 0.552$, $P < 0.00$), perceived risk($\rho = 0.404$, $P < 0.00$), perceived usefulness ($\rho = 0.396$, $P < 0.00$), ease of use ($\rho = 0.524$, $P < 0.00$), intention ($\rho = 0.177$, $P < 0.00$), and output quality ($\rho = 0.496$, $P < 0.00$).

Perceived risk to use e-Health system has a strong relationship with training which is significant at 99% ($\rho = 0.404$). Hence, **Hypothesis 2 is supported.**

Perceived ease of use e-Health system has a strong relationship with training which is significant at 99% ($\rho = 0.524$). Hence, **Hypothesis 5 is supported.**

Perceived usefulness from using e-Health system has a strong relationship with system characteristics which is significant at 99% ($\rho = 0.396$). Hence, **Hypothesis 8 is supported.**

- **Fear of Accountability Discussion**

The results of Pearson Correlation of hypotheses show that fear of accountability is jointly predicted by system characteristics ($\rho = 0.615$, $P < 0.00$), training ($\rho = 0.552$, $P < 0.00$), perceived risk($\rho = 0.485$, $P < 0.00$), perceived usefulness ($\rho = 0.442$, $P < 0.00$), ease of use ($\rho = 0.522$, $P <$

0.00), intention (ρ = 0.146, P < 0.01), output quality (ρ = 0.546, P < 0.00), and culture (ρ = 0.136, P < 0.01)

perceived risk to use e-Health system has a strong relationship with fear of accountability which is significant at 99% (ρ = 0.485). Hence, **Hypothesis 3 is supported.**

Perceived ease of use e-Health system has a strong relationship with fear of accountability which is significant at 99% (ρ = 0.522). Hence, **Hypothesis 6 is supported.**

Perceived usefulness from using e-Health system has a strong relationship with system characteristics which is significant at 99% (ρ = 0.442). Hence, **Hypothesis 9 is supported.**

- **Perceived Risk Discussion**

The results of Pearson Correlation of hypotheses show that perceived risk is jointly predicted by system characteristics (ρ = 0.438, P < 0.00), training (ρ = 0.404, P < 0.00), fear of accountability (ρ = 0.485, P < 0.00), perceived usefulness (ρ = 0.269, P < 0.00), ease of use (ρ = 0.526, P < 0.00), intention (ρ = 0.175, P < 0.01), output quality (ρ = 0.528, P < 0.00), and culture (ρ = 0.123, P < 0.03)

Perceived risk of use e-Health system has a strong relationship with perceived usefulness which is significant at 99% (ρ = 0.269). Hence, **Hypothesis 10 is supported.**

Perceived risk of use e-Health system has a strong relationship with perceived ease of use which is significant at 99% (ρ = 0.526). Hence, **Hypothesis 11 is supported.**

- **Output Quality Discussion**

The results of Pearson Correlation of hypotheses show that output quality is jointly predicted by system characteristics (ρ = 0.627, P < 0.00), training (ρ = 0.496, P < 0.00), fear of accountability (ρ = 0.546, P < 0.00), perceived risk (ρ = 0.528, P < 0.00), perceived usefulness (ρ = 0.450, P < 0.00), ease of use (ρ = 0.674, P < 0.00), intention (ρ = 0.203, P < 0.01), and culture (ρ = 0.117, P < 0.04).

Intention to use e-Health system has a strong relationship with output quality which is significant at 99% (ρ = 0.203). Hence, **Hypothesis 12 is supported.**

- **Culture Discussion**

The results of Pearson Correlation of hypotheses show that culture is jointly predicted by fear of accountability (ρ = 0.136, P < 0.00), perceived risk (ρ = 0.123, P < 0.03), and output quality (ρ = 0.117, P < 0.04).

Intention to use e-Health system has no relationship with culture (ρ = 0.089). Hence, **Hypothesis 13 is not supported.**

The results indicate that all results are logical and can be adopted, when compared with previous studies in the literature, which have been

addressed in Chapter Two. Table (4-12) show the relationship between research findings and previous studies

Table (4-12): Related Studies to Results of Hypothesis Testing

No.	Factors	Previous Studies
1	**System characteristic**	This result agree with Ahlam & Ahmad (2014) study, Rho et al., 2014, Yu et al., (2009), Mueller and Zimmermann (2009), Nov and Ye (2008), Wang et al (2007), Wixom and Todd (2005), DeLone and McLean (2003).
2	**Employees training**	This result agree with Al-Sayyed & Abdalhaq, (2016), Allahyari and Ramazani (2012), Al-Shorbaji (2009), Aggelidis VP, Chatzoglou PD. (2009), Khalifa & Alswailem (2015), Venkatesh and Bala (2008), Tung, Chang & Chou (2008), Wu et al., (2008), Amoako-Gyampah and Salam (2004) studies.
3	**Fear of accountability**	No previous studies related to this factor. (it's a result of interviews).
4	**Perceived risk**	This results agree with Featherman & Pavlou, (2002), Ortega Egea & Román González, (2011), Rose & Fogarty, (2006), Featherman & Pavlou, (2002) studies.
5	**Output quality**	This result agree with Mutul (2015), Anja et. al (2014), We, Shen & Lin (2000), and Venkatesh and Davis (2000) studies.
6	**Culture.**	This result agree Hoqu and Bao, (2015) and Jung & Loria, (2010) studies, and disagree with Ortega Egea & Roman Gonzalez (2011) study, and Aggelidis & Chatzoglon (2009).

4.5 E-Health Adoption Framework in Palestine

Based on the results of hypotheses, the researcher explains the e-Health system adoption framework in Palestine. Table (4-13) summarizes the results of hypotheses between factors.

Table (4-13): Correlations Between Factors Influencing E-Health System.

Factor	System Characteristics	Training	Fear of Accountability	Perceived Risk	Perceived Usefulness	Ease of Use	Intention	Output Quality	Culture
System Characteristics									
Training									
Fear of Accountability									
Perceived Risk	H1*	H2*	H3*					NH	NH
Perceived Usefulness	H4*	H5*	H6*	H10*					
Ease of Use	H7*	H8*	H9*	H11*					
Intention								H12*	
Output Quality									NH
Culture									

***: Supported Hypothesis.**

NH: New Hypotheses (new results).

Depending on the previous table, e-Health system Adoption Framework in Palestine is:

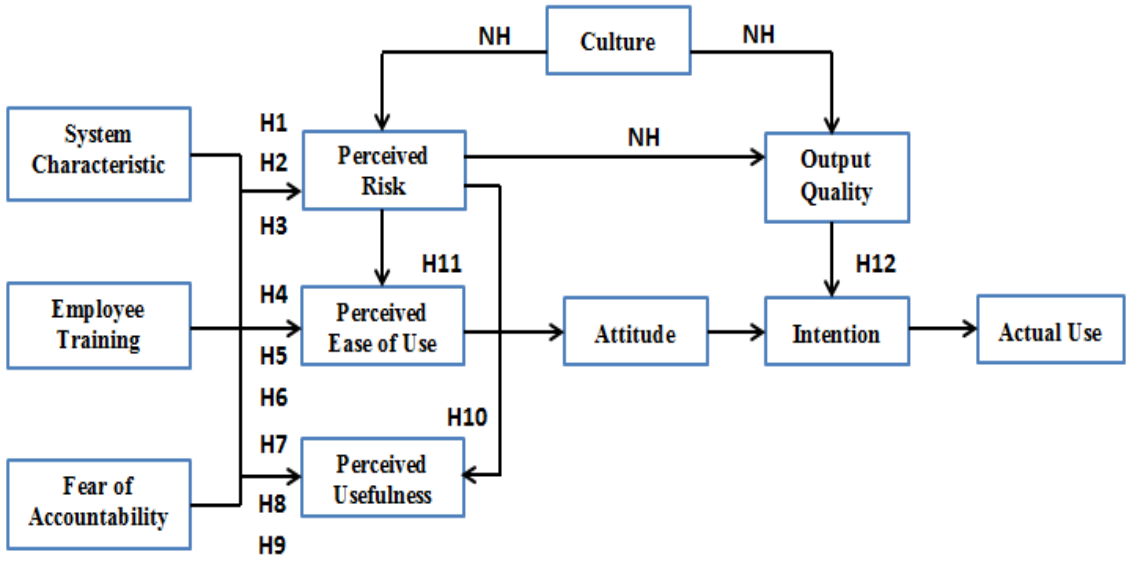

Figure (4.1): E-Health System Adoption Framework.

E-Health Acceptance Framework Based on the Correlation between Factors

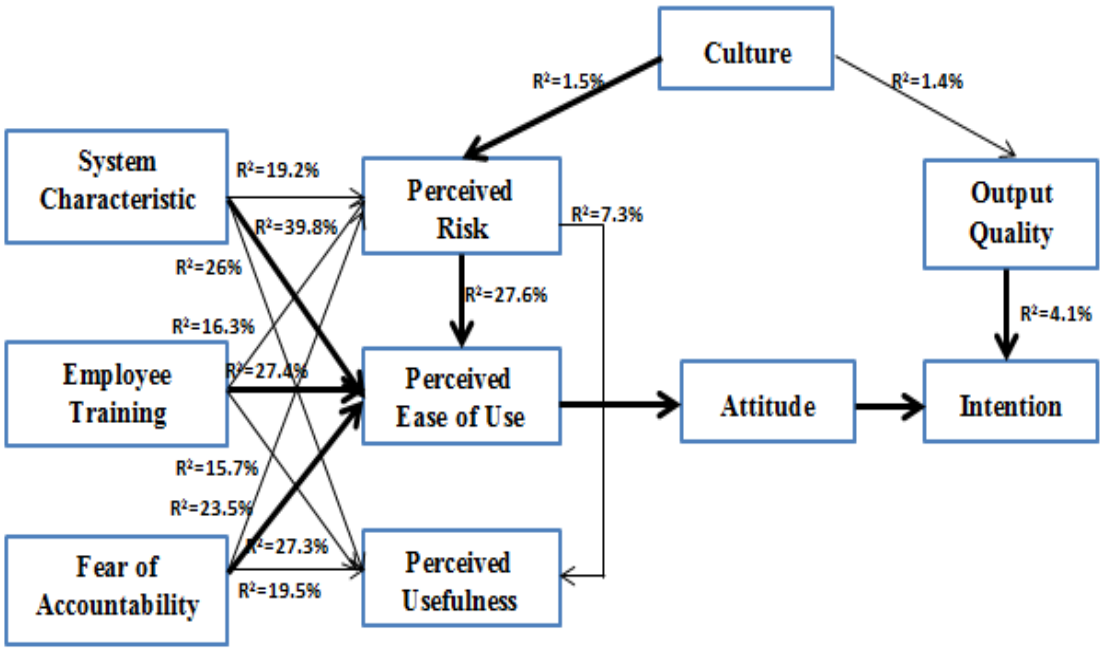

Figure (4.2): E-Health Framework Based on Factors Relationship.

4.6 Introduction to Qualitative Analysis

In order to analyze the interviews, thematic analysis technique was used; which is the most suitable used technique for scientific research.

4.6.1 Qualitative Data Analysis (Interviews Analysis)

To collect data and obtain more information about the research problem, semi- structured interviews have been conducted in order to get appointments for the interviews, the researcher connected with the Ministry of Health and top management of the three hospitals to request face-to-face meetings with some aimed members to discuss the issue of interest, as soon as requests approval, the interview appointments were arranged.

The researcher gets the research interview results based on Miles, et al., (2014) approach that consist of three general steps to analyze qualitative data, they are: data reduction, data display, and conclusions drawing. Data reduction refers to how select, code, and categorize qualitative data; while data display refer to the pattern in which data will be presented such as a matrix, a graph, a diagram, or a chart (Sekaran and Bougie, 2010; Creswell, 2012). The researcher coding the interviews data with theme unit that considered the larger and the more useful unit of content analysis according to Sekaran and Bougie (2010). Table (4-13) provides a summary of all used codes, issues discussed and the identified central themes.

Table (4-14): Summary of Identified codes, basic themes, and central themes.

Codes	Issues discussed	Central themes
Technology	Synchronous	**Tools & forms**
System	Asynchronous	
	Medical record	
	tele-monitoring M-health	
Different systems	Healthcare services	**E-Health concepts**
	Data upload & share	
Names	Staff interaction	
	Modern tech.	
Internal	Technological	**Factors affecting adoption**
	Environmental	
External	Social	
	Human	
	Financial	
Reward	Training course	**Management Role**
	Awareness session	
	Clear Policies	
Punishment	Instructions	
	Mandatory	
Better work	Data exchange	**E-Health benefits**
	Cost decrease	
Enhancing services	Work enhancement	
	Communication	
	Quality	
	Adjust	

The five themes emerged from the semi-structured interviews are presented below:

- **The E-Health System Tools and Forms in Palestinian Hospital**

The results show that synchronous e-Health tools are the least widely used in the Palestinian hospitals, when compared with asynchronous tools. This is because the infrastructure is not prepared to exchange effectively video or voice synchronously, or to use synchronized e-Health tools which

need the high-speed Internet and wide range of bandwidth, and that's what did not available in the Palestinian case, due to the weakness of the physical possibilities and capabilities, and the restrictions forced by the Israeli occupation

The interviewees highlighted that the most common forms of e-Health services available in Palestinian hospitals are patient electronic records, e- prescription, X-Ray and e-laboratory. They also mentioned that some e-Health forms are still not implemented in Palestinian hospitals such as telemedicine, tele-monitoring and M-health.

- **The Concept of E-Health According to Specialists**

The Health information systems, which are employed in hospitals, are with different names, but with same functionality. Hospitals differ in their definition of e-Health according to its usage internally, but all definitions close to each other. Some definitions are

- Is a way to enrich the healthcare process with modern technology and its tools.
- The management and control of -administrative, medical care, and accounting process- that are related to medical staff and patients.
- Platform to upload and exchange data, and a tool to enhance interaction between medical staff and all hospitals units and patients electronically.

- **Factors Influencing the Adoption of E-Health by Health Practitioners'**

Researcher discussed with IT specialists and users' specific factors that influence e-Health adoption (the factors that explained in the research framework). They considered these factors appropriate and influence e-Health technology.

Interviewee also mention technology anxiety and self- efficacy, technical support, subjective norm, fear of failure, Individual factors Socio-demographic characteristics (age, gender, experience, etc.) and fear of being laid off, resistance to change, technology and computer self-efficacy, subjective norm, end user's intention to use the technology, staff attitudes, security, obstacle in system design, as additional factors not took in this research framework.

- **Management Role and Hospital Intervention to Ensure E-Health Acceptance**

Interviewees focused on the role of the hospital management in promoting adoption of electronic system between medical staff, and this occurred through awareness session, training courses, formulating clear policies and instructions. Despite that, the interviewees noted that hospital management forced employees to use the prevalent system because when the management decide to adopt it in the hospitals, the employees do not have the choice to accept or reject it because using it is mandatory and they must commit to the company laws.

❖ **The Benefits from Adopting E-Health System**

Interviewees mention number of benefits gained from utilizing the system, such as: (1) Decreasing time, effort, and cost of delivering health services (2) Reducing administrative costs (e.g. Paper costs) (3) Improving patient safety and quality of health care (4) Reducing human and medical errors (5) Smooth sharing of information between health staff (6) Easy access to stored data by authorized people (7) Adjusting the movement of medicine from the center pharmacy (8) Adjusting accounting operation of medical services; where everything spent during patients' treatment is electronically recorded.

4.7 Summary

In this chapter the results of data analysis, which were collected via survey and interviews have been presented. The results indicated that there are some statistical differences among participants according to their job title, system usage, completed work by using the system and type of hospitals.

Furthermore, the results indicated that the highest percentage of participants are males, aged (21-30 years old), and the highest percentage of participants are who have (1-5 years) work experience, Nurses have the highest percentage according to job title and form (49.30%), (80%-100%) of the participants use the system to complete the work. Also (78.30%) of the participants use the system daily, the percentage of participants who

work in governmental hospital is equal to the participants who work in private hospital.

Additionally, all hypotheses are significant at 99%, except H13 (Culture has a positive influence on intention to use the e - health system). The results of hypotheses, which derived from the previous literature review and conducted interviews, are supporting TAM model and empirical studies.

Chapter Five

Conclusions and Recommendations

Chapter Five
Conclusions and Recommendations

This chapter aims to summarize the research results and conclusion, it explores the recommendation that are based on the research findings in order to develop and adopt e-Health systems. In addition, this chapter discusses the research contribution to current literature and the suggestions of conducting future studies.

5.1 Conclusion

The purpose of this research was to determine the factors that influence health practitioners' intention toward adoption of an electronic health system (e-Health) in Palestinian health sector, and then introduce e-Health technology adoption framework, which can assess the health sector to spread this developed technology among Palestinian health institutions, center, and hospitals.

The research framework was conceptualized via reviewing related literature and experts' opinions in the design process, the framework depends on Technology Acceptance Model (TAM).

This research covers three hospitals which are Rafidia Surgical Hospital, Specialized Arab, and An-najah hospitals, where distributed in Nablus governorate as the case study of this research. It utilized both qualitative and quantitative to answer the research questions and to test hypotheses. Qualitative data were collected via in depth semi-structured interviews with specialists. Furthermore, Quantitative data were related to

the factors that influencing e-Health acceptance collected via a survey which was distributed to a random sample (n=300) of health practitioners at hospitals.

The research questionnaire was collected, coded, and entered in to SPSS in order to examine factors affecting the acceptance of e-Health system in Palestinian health sector. Various statistical processes were employed such as frequency, means, percentages, in order to answer and test the research questions and hypotheses.

Furthermore, a qualitative data that explores the status of e-Health system and its applications, tools, infrastructure obstacles, challenges, was derived by exploratory in-depth semi-structured interviews with individuals in targeted area.

The research revealed that e-Health systems in State of Palestine hospitals is new and not mature yet and quiet limited because; it is new innovation and also not all the system forms are available. Furthermore, the systems is not available in most Palestinian hospitals and face obstacles related to users.

It is also obvious that Palestinian health sector do not have clear plans and strategies to motivate employees to adopt e-Health system usage. Hence, in order to aid hospitals to increase e-Health adoption; it is important to identify factors that influence e-Health adoption in Palestine. Therefore, we introduced acceptance model for e-Health systems.

In addition, results indicate that there are significant statistical differences between the participants, they have different perceptions toward e-Health system; some of them have high intention to use the system, as well as they have a low fear of the risk and accountability. Some of them have also high intention to use e-Health but they fear of this technology. Other participants do not intend to use e-Health system. These results agree with Innovation Diffusion Theory, which classifies users of technology into three parts: innovators who like to try innovations and be ready to accept the risk. Early adopters who like to adopt innovations in the first stages of the diffusion process. Early and late majority people, who like to accept the innovation when it becomes major.

Moreover, results indicate that perceived usefulness, perceived ease of use, perceived risk, and output quality are the most significant factors affecting intention to use e-Health systems. Whereas, culture is influencing e-Health system adoption in less degree.

According to interview results, hospitals management committed to supporting e-Health system, provide appropriate e-Health physical resources, and provide adequate financial and human support for the implementation of e-Health system. In addition, the results show that asynchronous e-Health tools are the most widely used in the Palestinian hospitals. Hence, most hospitals argued that ICT need to develop and to provide it with a protection system, furthermore there is a need to improve the internet infrastructure and mobile services.

5.2 Recommendations

The health sector in Palestine needs more effort in order to adopt different technology aspects to complete work in an efficient manner. Hospitals and health centers should focus on four main fields to develop and spread technology usage among medical care employees. These fields include formulating and implementing new strategies, developing the operational process, promoting ICT sector and equipment's in order to enhance e-Health acceptance by care practitioners, and introducing high quality e-Health systems. Each field is discussed on follows:

This section answer the second sub-questions: What changes are required to improve e-Health environment?

- **Formulating and Implementing E-Health Technology Strategies**

Based on research results the Palestinian health care institutions and hospitals do not have clear strategies to adopt e-Health technology. In addition, Hospitals roles are limited in defining and offering suitable e-Health services, hence it should adopt new rules to motivate and encourage employees to use technology effectively. It is worth mentioning that formulating suitable e-Health strategies are the most important issue for decision makers in hospitals if they want to understand the hospital position in order to reduce the gap between what exist and the new technology trends in e-Health field.

Formulating strategies aims to adopt significant processes, which focus on technology adoption within hospitals; strategy formulation requires SWOT analysis, in order to explore and study the internal and external factors affecting e-Health technology.

The external factors are related to opportunities and threats, which include governmental regulations, the technological capabilities, economic scale, environmental issues, etc... Whereas internal factors are related to strengths and weaknesses of the hospital, which consist of hospital rules and policies, management support, employees training, availability of necessary IT resources & technical staff, infrastructure facilities, system design features, job relevance, practitioners' perceptions and their experiences in e-Health field, etc...

E-Health strategic plans must contain at least one objective about IT improvement in the organization and increase their main dependency in this field.

In order to determine successful e-Health strategies, hospitals should take into account the following:

- E-Health strategic plan must be compatible with the strategic plan of the hospital and workflow.
- Hospitals should balance between the interest of customers (patients) and employees because the employees constitute an essential part of the working process not less than the importance of customers in achieving

hospital goals. Hence, the involvement of health care employees and IT specialists in the preparation of e-Health strategies is necessary for successful strategies to develop.

- Research and development (R&D) processes play an important role in creating an environment that is able to accept the technology and able to evolve rapidly; this can be accomplished through focusing on the long-term plans that include promoting a culture of change within the hospital, in order to enhance the acceptance of new technology.

- Hospitals should set up a specialized e-Health unit or center, or enhance the role of unit or center that really exist in the preparation of e-Health strategies.

❖ **Promoting ICT Sector and Equipment's.**

The majority of new and existing e-Health tasks and jobs now require the use of ICT, which considered currently being a vital aspect of modern health services delivering. ICT is essentially a set of tools, which health care practitioners could employ to achieve the objectives related to e-Health. The importance of telecommunications and information sector demonstrated by establishing an infrastructure that encourages hospitals to adopt new technological tools and building a technological culture among society.

The emergence of new IT and software companies with distinctive capabilities contributes significantly to encourage many hospitals to adopt

e-Health technology and other useful technical tools. Also, it will provide opportunities to build a successful e-Health system.

Hospitals and ministry of health should focus on establishing strong partnerships with Ministry of Telecommunication and Information to increase technological progress and discuss ways of development through mutual cooperation between them.

Hospitals should utilize a security system to protect their database servers from viruses and hackers. This requires a cooperation with IT companies.

❖ **Introducing High Quality E-Health Systems**

Hospitals should pay more attention to technical issues besides operational issues; the technical issues play a significant role to introduce high-quality e-Health technology and to increase the usage. The results indicated that perceived usefulness, perceived ease of use, and perceived risk are affecting the adoption of e-Health systems. Therefore, the hospital must consider all the factors that affect the use of e-Health system. Based on these findings, the hospital should focus on creating and adopting e-Health systems, which include the following features:

1. Simple and User-friendly.
2. Secure and reliable
3. Available all the time.
4. Accessible from anywhere by authorities' users.

5. Achieve the privacy of employees and patients.
6. Support Arabic Language.
7. Free of effort and reduce time to perform tasks.
8. Free of errors and risk.

Hospitals should focus on technical issues by working on the following area:

- Hospitals should give more attention to find technical staff capable of handling with devices and systems and solving the problems that could face employees during performing work.
- Hospitals should keep the system servers up all the time. Furthermore, it should have backup servers and databases, if a malfunction occurs in the main server, there must be alternative to perform the same functions.
- Palestinian hospitals should cooperate with IT specialist and companies to assist them to implement the necessary electronic system.
- Hospitals should establish a comprehensive security system to protect e-Health servers from viruses and hackers. Security systems should be announced to all employees to trust e-Health technology.
- Hospitals should use advanced technologies for authentication process like mobile code; for example, a code will be sent to user mobile to

verify user access. Also, by determining the respective powers of employees and managers to access the information to ensure system confidentiality.

❖ **Developing the Operational Processes for E-Health Technology**

Operational processes ensure a standardized approach to all procedures of activities performed. Hence, the dissemination of new technology needs effort from all hospital departments. In addition, departments should communicate and cooperate with hospital top-level management to achieve the following issues:

1. Hospitals should increase their role to achieve the high level of e-Health technology adoption through involving not only employees but also patients in the development process in order to decline rejection and resistance to use new technology. Also, because employees invent the obstacles that make e-Health system difficult to use; hospital should keep pace with technological advancement that benefits their work, and also apply new technology which will enhance the interactive health activities, utilize ease of use applications and tools, and show the usefulness of e-Health and its positive outcomes.

2. Hospitals should increase the information security, and reduce risk that would raise the employees' playfulness toward using a computer, thus enhancing their perceived ease of use the e-Health system, and thus achieving positive behavior intention to use this system.

3. Hospitals management should emphasize on employees who less integrate technology with their work, by giving them information about the advantages of technology in enhancing the medical process or by increasing them tasks dependence on technology.

4. Hospitals should have an interest in intermittently system users through giving them more training or giving them information about the benefits that can be gained through using technology. Thus fostering innovation usage.

5. Management should emphasize on doctors by making pilot study to determine factors leading them to low system acceptance.

6. Hospitals should mitigate the invoking the passive reaction of the doctors toward e-Health. It should train them to use the computer and its programs effectively in order to encourage them to use a computer. Thus, enhancing and consolidating them believes that the e-Health technology is applicable to their job.

7. Management should mitigate its employees fear of accountability by talking openly about past mistakes and problems to publicly endorse the concept of blame-free error reporting, and to offer encouragement and support to those directly involved

8. Palestinian hospitals should adopt all forms of e-Health services; it is notable from the research that hospital's emphasis only on the core form of e-Health systems.

9. Hospitals should develop a standardized evaluation system related to e-Health usage in order to feedback employees with the benefits resulting from the use of e-Health and its positive impact on their job performance. In addition, it should make employees feel more secure.

10. Hospitals should coordinate with experts in the field of e-Health to make employees listen to success stories, especially the elder employees and doctors. In this way, they can be aware of the usefulness of e-Health.

11. Hospitals should establish a legal, enforcement, and legislative system that enforces employees to carry out all instructions and laws related to e-Health technology. Reward and punishment policy should be implemented.

5.3 Research Contribution

The results of this research are great importance to researchers, Ministry of health, health institutions, and Ministry of Telecommunication and Information, in developing e-Health technology in Palestine from many aspects. Therefore, this research is considered to be a significant contribution in several areas, these contributions are:

- Helping researchers interested in developing a framework or model for e-Health technology acceptance.

- Helping hospitals concerned with application and adoption of e-Health technology successfully.

- Introducing e-Health system adoption framework in Palestine, which could effectively improve the rate of usage.
- Understanding the hospitals' medical staff behaviors, perceptions and awareness toward e-Health technology in Palestine.
- Encouraging hospital administration to re-evaluate its policies on ICT adoption, employee training, and systems management.
- Encouraging IT companies to develop e-Health requirements of tools, applications, and equipment's, also enhance the infrastructure of internet services.
- Advising the Palestinian health institutions and ministry of health in formulating the suited strategies, which will increase the rate of e-Health technology adoption and usage in Palestine.

5.4 Future Research

The following topics could be studied in the future, which may contribute to the development of e-Health technology in Palestine:

1. Testing additional factors and other Palestinian governorates, which may bring a different perspective.
2. Studying the possibility of applying mobile health (m-health). Mobile phones will be leveraged to provide, use, access, or share information at the moment of need.

3. Studying the role of Ministry of Telecommunications and Information Technology IT and software companies, Palestine Telecommunications Company (Paltel), international health institutions such as WHO, and government in improving and encouraging e-Health Technology in State of Palestine.

4. Studying the advantages and disadvantages of all e-Health tools, whether used or not in Palestinian hospitals, in order to guide the hospitals to use the optimal applications or tools suited to their situation and their staff capabilities.

References

Abdekhoda, M., Ahmadi, M., Gohari, M., & Noruzi, A. (2015). ***The effects of organizational contextual factors on physicians' attitude toward adoption of Electronic Medical Records***. **Journal of Biomedical Informatics,** *53*(2). 174-179 http://doi.org/10.1016/j.jbi.2014.10.008

Abu Zeinah, M., AMajid, A., & Abu Farha, R. (2013). **Gender-Based Analysis of Public Health Sector Services: A Beneficiary-Based Study.** Palestine. Retrieved from http://www.miftah.org/Publications/Books/GRBHealthBookEn.pdf.

Aggelidis, V. P., & Chatzoglou, P. D. (2009). ***Using a modified technology acceptance model in hospitals.*** **International Journal of Medical Informatics**, *78*(2), 115–26. Retrieved from http://www.sciencedirect.com/science/article/pii/S1386505608000890.

Ahlan, A. R., & Ahmad, B. I. (2014). ***User acceptance of health information technology (HIT) in developing countries: A conceptual model***. **Procedia Technology**, *16*, 1287–1296. http://doi.org/10.1016/j.protcy.2014.10.145

Allahyari, A., and Ramazani, M. (2012). ***Studying impact of organizational factors in information technology acceptance in accounting occupation by use of TAM model (Iranian Case Study)***. **ARPN Journal of Systems and Software**. *2*(1), 12-17. Retrieved from https://ssrn.com/abstract=2199868.

Al-sayyed, F., & Abdalhaq, B. (2016). ***Interventional factors affecting instructors adoption of e-Learning system: A case study of palestine***. **Journal of Theoretical and Applied Information Technology**, *83*(1), 119–137. Retrieved from http://www.jatit.org/volumes/Vol83No1/13Vol83No1.pdf.

Al-Shorbaji, N. (2009). ***E-Health in the eastern mediterranean region: A decade of challenges and achievements***. **Eastern Mediterranean Health Journal**, *14*(2), 157–173. http://doi.org/Review

Ammenwerth, E., Gräber, S., Herrmann, G., Bürkle, T., & König, J. (2003). ***Evaluation of health information systems—problems and challenges.*** **International Journal of Medical Informatics**, *71*(2), 125–135. http://doi.org/10.1016/S1386-5056(03)00131-X

Amoako-Gyampah, K., & Salam, A. F. (2004). ***An extension of the technology acceptance model in an ERP implementation environment.*** **Information & Management**, *41*(6), 731–745. http://doi.org/10.1016/j.im.2003.08.010

Anja, Neff; Heiko, Gewald; and Ulrich, Haase, "Why do they resist? Examining the salient factors of physicians' IT adoption behavious" (2014). ***PACIS 2014 Proceedings***. 223. Retrieved from http://aisel.aisnet.org/pacis2014/223

Anker, S. D., Koehler, F., & Abraham, W. T. (2011). ***Telemedicine and remote management of patients with heart failure.*** **Journal of**

Biomedical Informatics, 378(9792), 731–739. http://doi.org/10.1016/S0140-6736(11)61229-4.

Austin, C., & Boxerman, S. (2003). **Information systems for healthcare management** (6th ed.). Chicago: Health Administration Press.

AVASANT (2013). **Palestinian ICT Market Penetration Study**, Final Report. PITA, 2013, June. jrvdvRetrieved from http://www.pita.ps/sites/default/files/studies/international_market_penetration_study.pdf

Bennani, A., Belalia, M., Oumlil, R. (2008). ***"As a human factor, the attitude of healthcare practitioners is the primary step for the e-health: First outcome of an ongoing study in Morocco"***. **Communications of the IBIMA Journal**, 3(4). 28-34.

Blaya, J. A., Fraser, H. S. F., & Holt, B. (2010). ***E-Health Technologies Show Promise in Developing Countries.*** **Health Affairs journal**, *29*(2), 244–251. http://doi.org/10.1377/hlthaff.2009.0894

Braun, V. & Clarke, V. (2006). ***"Using thematic analysis in psychology"***. **Journal of Qualitative Research in Psychology**. *3* (2): 77-101. Retrieved from: doi:10.1191/1478088706qp063oa.

Bromley, D. B. (1990). ***Academic contributions to psychological counselling: I. A philosophy of science for the study of individual cases.*** **Journal of Counselling Psychology Quarterly**, *3*(3), 299-307.

Cashen, M., Dykes, P., & Gerber, B. (2004). ***E-Health technology and internet resources: Barriers for vulnerable populations***. **Journal of Cardiovascular Nursing,** *19*(3), 209-217.

Castellan, C. M. (2010). ***Quantitative and qualitative research: A view for clarity***. **International Journal of Education**, *2*(2), 1–14. http://doi.org/10.5296/ije.v2i2.446.

Cebul, R. D., Love, T. E., Jain, A. K., & Herbert, C. J. (2011). ***Electronic health records and quality of diabetes care.*** **New England Journal of Medicine,** *365*(24), 2338–2339. http://doi.org/10.1056/NEJMc1111722

Chae, Y. M., Heon Lee, J., Hee Ho, S., Ja Kim, H., Hong Jun, K., & Uk Won, J. (2001). ***Patient satisfaction with telemedicine in home health services for the elderly***. **International Journal of Medical Informatics**, *61*(2–3), 167–173. http://doi.org/10.1016/S1386-5056(01)00139-3

Chau, P., & Hu, P. (2002). ***Examining a model of information technology acceptance by individual professionals: An exploratory study.*** **Journal of Management Information Systems** *18* (4): 191–229.

Cochran, W.G. (1963). **Sampling Techniques, 2nd ed**. New York: John Wiley & Sons.

Codagnone, C., & Lupiañez-Villanueva, F. (2013). **Benchmarking Deployment of eHealth among General Practitioners. -** Final

Report Luxembourg. Publications Office of the European Union Retrieved from http://ec.europa.eu/information_society/newsroom /cf/dae/document.cfm?doc_id=4897

Coeira, E. (2003). **Guide to health informatics**. 2nd edition. Arnold Publication.

Collis, J. & Hussey, R. (2009) **Business Research: A practical guide for undergraduate and postgraduate students,** 3rd edition, New York, Palgrave Macmillan.

Creswell, J. (2012). **Educational research: Planning, conducting, and evaluating quantitative and qualitative research**. 1st edition, Boston: Pearson Education, Inc.

Cucciniello, M., Lapsley, I., Nasi, G., & Pagliari, C. (2015). ***Understanding key factors affecting electronic medical record implementation: A sociotechnical approach***. **Journal of BMC Health Services Research,** *15*(1), 1–19. http://doi.org/10. 1186/s12913-015-0928-7.

Currie, M., Philip, L. J., & Roberts, A. (2015). ***Attitudes towards the use and acceptance of eHealth technologies: a case study of older adults living with chronic pain and implications for rural healthcare***. **Journal of BMC Health Services Research**, 15(1), 162. http://doi.org/10.1186/s12913-015-0825-0.

Dansky, K. H., Gamm, L. D., Vasey, J. J., & Barsukiewicz, C. K. (1998). ***Electronic medical records: are physicians ready?*. Journal of Healthcare Management/American College of Healthcare Executives**, *44*(6), 440-54.

Davis, F. D. (1989). ***Perceived usefulness, perceived ease of use, and user acceptance of information technology***. **MIS Quarterly Journal**, *13(*3), 319-340. Retrieved from http://www.jstor.org/stable/249008.

Davis, F.D. (1986). **A technology acceptance model for empirically testing new end-user information systems: theory and results**, Phd Dissertation Thesis, Wayne State University. Retrieved from https://www.researchgate.net/profile/Fred_Davis2/publication/35465050_A_Technology_Acceptance_Model_for_Empirically_Testing_New_End-User_Information_Systems/links /0c960519fbaddf3ba7000000/A-Technology-Acceptance-Model-for-Empirically-Testing-New-End-User-Information-Systems.pdf

DeCoster, J. (2004): **Data Analysis in SPSS**. Retrieved from http://www.stat-help.com/notes.html. (Acsessed Nov.17, 2016).

DeGroot, T., & Kiker,S. (2003). *A meta-analysis of the non-monetary effects of employee health management programs*. Human Resource Management. 42(1), 53-69.

Deluca, J., Enmark, R. (2000). ***E-Health: The changing model of healthcare.* Frontiers of Health Services Management**, *17*(1), 3-15.

Dillon, A. and Morris, M. (1996). ***User acceptance of new information technology: theories and models. In M. Williams (ed.)*** **Annual Review of Information Science and Technology,** Vol. 31, Medford NJ: Information Today, 3-32. https://www.ischool.utexas.edu/~adillon/BookChapters/User%20acceptance.htm.

Dixit, R., Choudhary, S., Bansal, B. (2008). "**E-Health: Emerging ICT, Implementation and Provisioning Issues in Health care Services"** Proceedings of the National Conference on Advancements in Information Technology & Communication Technology; 2008 March 15-16; Allahabad, India.

Douglas GP, Gadabu OJ, Joukes S, Mumba S, McKay MV, Ben-Smith A, et al. (2010). ***Using Touchscreen Electronic Medical Record Systems to Support and Monitor National Scale-Up of Antiretroviral Therapy in Malawi.*** **Journal of PLOS Medicen***, 7*(8), 1-6.

Eide, H., Eide, E., Kristjansdottir, O., Dulmen, S. (2010). "**Mobile health care and health behavior change - Development of a system for virtual counseling based on written diary questionnaires and situational feedback"**. In proceedings of The International Conference on Universal Technologies; May 19-20, 2010; Oslo, Norway. Oslo: Oslo University College. 1-13.

Eisenhardt, K. (1989). ***Building theories from case study***. **Academy of Management Review**, *14*(4), 532–550. Retrieved from

http://www.uio.no/studier/emner/matnat/ifi/INF5571/v15/timeplan/ar-docs/eisenhardt-1989.pdf

European Commission. (2008). **Survey takes pulse of e-Health in Europe and prescribes wider ICT use among doctors**. Retrieved from http://europa.eu/rapid/press-release_IP-08-641_en.htm?locale=en

European Commission. (2011). **European countries on their journey towards national eHealth infrastructures. Final European progress report.** Retrieved from http://ehealth-strategies.eu/report/eHealth_Strategies_Final_Report_Web.pdf

Eysenbach, G. (2001). ***What is e-Health?*** **Journal of Medical Internet Research,** *3*(2), 1–5. http://doi.org/10.2196/jmir.3.2.e20

Feagin, J., Orum, A., & Sjoberg, G. (1991). **A case for case study**. 1st edition, Chapel Hill, NC: University of North Carolina Press.

Featherman, M. S., & Pavlou, P. A. (2002). ***Predicting E-services Adoption: A Perceived Risk Facets Perspective***. **International Journal of Human-Computer Studies,** *59*(4), 1034–1046. Retrieved from http://melody.syr.edu/hci/amcis02_minitrack/CR/Featherman.pdf

Fromm, C., Kapadia, F., Molla, D. S., Sherwood, E., & Mahdi, A. R. (2009). **ICT in Health for Development A white paper commissioned** *by□: UNDESA-GAID*. Retrieved from

http://unpan1.un.org/intradoc/groups/public/documents/un-dpadm/unpan036980.pdf

George, C., Duquenoy, P., & Whitehouse, D. (2014). **E-Health: Legal,Eethical and Governance Challenges.** 1st edition. London. Springer Science &Business Media. http://doi.org/10.1007/978-3-642-22474-4

Goldstein, D. (2000). E-**Healthcare: Harness The Power Of Internet E-Commerce E-Care**. 1st edition. Jones & Bartlett Learning.

Greasley, P. (2008). ***Quantitative data analysis using SPSS: an introduction for health and social sciences***. 2nd edition, Maidenhead: McGraw-Hill / Open University Press.

Grimson, J., Grimson, W., Hasselbring, W. (2000). ***The SI Challenge in Health Care***. **Journal of Communications of ACM**, *43* (6), 48-55.

Häyrinen, K., Saranto, K., Nykänen, P. (2008) ***Definition, structure, content, use and impacts of electronic health records: A review of the research literature.*** **International Journal of Medical Informatics**, 77, 291-304.

Healy, J. C. (2008). Implementing e-Health in developing countries: Guidance and principles. **ICT Applications and Cyber security Division (CYB). Policies and Strategies Department. [monografía en Internet]. Bureau for Telecommunication Development International Telecommunication Union.** Retrieved from

http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Implementing+e-Health+in+Developing+Countries+Guidance+and+Principles#0.

Heppner P. Paul, Wamplod, E., Kivlighan, M. (2008), **Research Design in Counseling,** 3rd edition, Thomson Learning. Inc.

Holden, R. J., & Karsh, B.-T. (2010). ***The technology acceptance model: its past and its future in health care.*** **Journal of Biomedical Informatics,** *43*(1), 159–172. http://doi.org/10.1016/j.jbi.2009.07.002.

Hoque, M. R., & Bao, Y. (2015). ***Cultural Influence on Adoption and Use of e-Health: Evidence in Bangladesh***. **Journal of Telemedicine and E-Health**, *21*(10), 845–851. http://doi.org/10.1089/tmj.2014.0128.

Huang, J.-C. (2013). ***Innovative health care delivery system-A questionnaire survey to ervaluate the influence of behavioral factors on individuals' acceptance of telecare***. **computers in biology and medicine**, *43*(4), 281–286. http://doi.org/10.1016/j.compbiomed.2012.12.011.

Ibrahim, S. M. (2013). **Impact of Information and Communication Technology on Healthcare in Health Centers in the West Bank – Palestine (M.Sc. dissertation,** An-Najah National University). Retrieved from https://scholar.najah.edu/sites/default/ files/Saed Ibrahim_0.pdf.

Idowu, B., Ogunbodede, E., & Idowu, B. (2003). ***Information and communication technology in Nigeria the health sector experience.*** **Journal of Information Technology Impact,** *3*(2), 69–76. Retrieved from http://jiti.com/v03/v3n2.069-076.pdf

International telecommunication union. (2012). **The World Telecommunication Standardization Assembly.** Dubai. Retrieved from http://www.itu.int/dms_pub/itu-t/opb/res/T-RES-T.78-2012-PDF-E.pdf

Internet World Stats, (2016). **Internet Usage in the Middle East.** Retrieved from http://www.internetworldstats.com/stats5.htm#me. (Accessed Feb. 15,2016).

Jalil, M. (2013). **Practical Guidelines for conducting research.** 1st edition. England: Committee for Enterprise Development.

Josip. C, Ashly. B, Chantelle. A, Kathrin.C., Pagliari, C., McKinstry, B., Procter, p., Majeed, A., and Aziz Sheikh (2008). **The Impact of eHealth on the Quality & Safety of Healthcare. Report for the NHS Connecting for Health Evaluation Programme.** london. Retrieved 21 Aprial 2016 from https://www1.imperial.ac.uk/ resources/32956FFC-BD76-47B7-94D2-FFAC56979B74/.

Jung, M., & Loria, K. (2010). ***Acceptance of swedish e-Health services***. **Journal of Multidisciplinary Healthcare**, *3*(2), 55–63. Retrieved from http://doi.org/10.2147/JMDH.S9159.

Jung, M.-L. (2008). **From Health to E-Health: Understanding Citizens' Acceptance of Online Health Care. (M.Sc. dissertation**, Luleå University of Technology).

Khalifa, M., & Alswailem, O. (2015). **Hospital information systems (HIS) acceptance and satisfaction: A case study of a tertiary care hospital.** *Procedia Computer Science*, *63*, 198–204. http://www.sciencedirect.com/science/article/pii/S1877050915024692.

Khasawneh, M. M., & Ibrahim, H. B. H. (2008). ***Adoption, diffusion, use and impact of ICT In developing countries: A case study of Jordan***. **Knowledge Management International Conference**, *5*(23), 428–432.

Kind, T., Silber, T. (2004). ***Ethical issues in pediatric e-Health***. **Clinical Pediatrics***, 43*(7), 593-599.

Kirshenbaum, D. (2002). **Ehealth: past, present, and future. Powerpoint presentation –west end associates**. Retrieved from http://www.nehimss.org/pubs/Kirshenbaum.ppt.

Kluckhohn, C. (1962). **Culture and Behavior**. 6th edition. New York: The Free Press of Glencoe.

Kothari, C. (2004). **Research methodology: methods and techniques.** 2nd Eidition. New Delhi: New Age International (P) Ltd. Retrieved

from http://www2.hcmuaf.edu.vn/data/quoctuan/Research Methodology - Methods and Techniques 2004.pdf.

Lee, M., C. (2010). ***Explaining and predicting users' continuance intention toward e-learning: an extension of the expectation-confirmation model,*** **Computer and Education Journal***, 54*(2), 506 – 516. http://www.sciencedirect.com/science/article/pii/S0360131509002425.

Li, J., Khoei, A., Seale, H., Ray, P., & Maclntyre, R. (2013). ***Health Care Provider Adoption of eHealth: Systematic Literature Review***. **Journal of Medical Research,** *2*(1), 1–19. Retrieved from http://www.i-jmr.org/article/viewFile/ijmr_v2i1e7/2

Lin, J., & Lu, H (2000), ***Towards an understanding of the behavioral intention to use a web site***, **International Journal of Information Management,** *20(*3): 197-208.

Lorig, K., Laurent, D., Deyo, R., & et al. (2002). "***Can a back pain email discussion group improve health status and lower healthcare costs?".*** **Arch Intern Med**.,162(7):792-796. doi:10-1001/pubs.Arch Intern Med.-ISSN-0003-9926-162-7-ioi10219

Luo, N., Koh, WP., Ng, WY., Yau, JW., Lim, LK., Sim, SS., Tay, EG. (2009). "***Acceptance of information and communication technologies for healthcare delivery: a sing health polyclinics***

study. **PubMed Journal,** *38*(6): 529-536. Retrieved from http://www.annals.edu.sg/pdf/38VolNo6Jun2009/V38N6p529.pdf.

Mair, F. S., May, C., O'Donnell, C., Finch, T., Sullivand, F., & Murray, E. (2012). ***Factors that promote or inhibit the implementation of e-Health systems: An explanatory systematic review***. **World Health Organization**, *90*(5), 357–364. http://doi.org/10.2471/BLT.11.099424

Marrow, P. (2008). ***An industrial perspective on future ICT in Hospital,*** **ICT Research Centre, BT Group plc**, 1-12.

Mekawie, N. (2013). **Factors affecting adoption of eHealth in Egypt.** (PHD. dissertation), London- UK. Middlesex University.

Melas, C. D., Zampetakis, L. A., Dimopoulou, A., & Moustakis, V. (2011). ***Modeling the acceptance of clinical information systems among hospital medical staff: An extended TAM model.*** **Journal of Biomedical Informatics,** *44*(4), 553–64. http://doi.org/10.1016/j.jbi.2011.01.009

Meyers, J., Van Brunt, D., Patrick, K., & Greene, A. (2002). ***Personalizing medicine on the Web***. **Health Forum Journal***, 45*(1), 22-26.

Miles, M. B., Huberman, M. a, & Saldana, J. (2014). **Qualitative Data Analysis: A Methods Sourcebook**. 3rd editon. Thousand Oaks, CA:SAGE. Retrieved from: http://researchtalk.com/wp-

content/uploads/2014/01/Miles-Huberman-Saldana-Drawing-and-Verifying-Conclusions.pdf

Ministry of Communications and Information Technology (2015). **Summary and figures on the Palestinian Information Society 2014.** Ramallah – Palestine. Retrieved from http://www.mtit.pna.ps/arv/Statistics of IT 2014.pdf.

Ministry of Health, PHIC, Health Status, Palestine, 2014, August 2015. http://www.moh.ps/Content/Books/kD3bquHr7jbwK9f6VQJAsLDCuckgEDlCZUFa9ssb62m9Eim2le562D_ECDSNEboZRJwc6HyiggSMzKUPMeDJa2vkBNlAdZOGlvNuS9CHKJjGO.pdf.

Mou, J., & Cohen, J. (2014). ***Trust, Risk and Perceived Usefulness in Consumer Acceptance of Online Health Services***. In **Australasian Conference on Information Systems-Consumer acceptance of online health services** (pp. 1–17). New Zealand. Retrieved from http://aut.researchgateway.ac.nz/handle/10292/8124

Mutula, S. M. (2015). ***Factors influencing perceptions and attitudes of nurses towards the use of ICT in patient care in Kwazulu Natal province, South Africa***. **The African Journal of Information Systems**, *8*(1), 1-14. Retrieved from http://digitalcommons. kennesaw.edu/ajis/vol8/iss1/1

Nemeth, C. P., Cook, R. I., Woods, D. D. (2005). ***The messy details: insights from the study of technical work in healthcare***. **IEEE**

transactions on systems, man, and cypernetics – Part A: Systems and Humans, *3*(46), 689-692.

Nicola, M., & Jarke, M. (1998). "**Design and Evaluation of Wireless Health Care Information Systems in Developing Countries".** In Proceedings of the IFIP 9.4 Conference: Implementation and Evaluation of Information Systems in Developing Countries; 1998 February; Bangkok.

Nuray. G, & Özlem. B (2015). ***Technology acceptance in health care: an integrative review of predictive factors and intervention programs. Turkey***. **Social and Behavioral Science Journal**, *195*(3): 1698-1704. https://doi.org/10.1016/j.sbspro.2015.06.263.

Omary, Z., Lupiana, D., Mtenzi, F., Wu, B. (2010). ***"Analysis of the challenges affecting e-healthcare adoption in developing countries: A case of tanzania"***. **International Journal of Information Studies***, 2*(1): 38-50.

Ortega Egea, J. M., & Román González, M. V. (2011). ***Explaining Physicians' Acceptance of EHCR Systems: An Extension of TAM With Trust and Risk Factors.*** **Journal of Computers in Human Behavior,** *27*(1), 319–332. http://doi.org/10.1016/j.chb.2010.08.010

Otieno, R. O. (2013). **To Explore Factors Influencing the Adoption and Use of ICT in Health Care – A case of Gertrude‟s Children‟s Hospital.**

Pagliari, C., Sloan, D., Gregor, P., Sullivan, F., Detmer, D., Kahan, J., Oortwijn, W., and MacGillivray, S., (2005), "***What Is eHealth (4): A scoping exercise to map the field"***, **Journal of Medical Internet Research**, *7* (1), 330–333. Retrieved from http://www.jmir.org/2005/1/e9/.

Pai, F. Y., & Huang, K. I. (2011). ***Applying the technology acceptance model to the introduction of healthcare information systems.*** **Technological Forecasting and Social Change***, 78*(4), 650-660.

Palestinian Central Bureau of Statistics, (2011). **Household Survey on Information and Communications Technology**. Retrieved August 19, 2016 from: http://www.pcbs.gov.ps/Downloads/book1809.pd.

Palestinian Central Bureau of Statistics. (2012). **World Information Society Day**,(May). Retrieved from http://www.pcbs.gov.ps/portals/_pcbs/PressRelease/Press_En_ITWD2013E.pdf.

Palestinian Central Bureau of Statistics. (2014). **Household Survey on Information and Communications Technology**. Retrieved from http://www.pcbs.gov.ps/Downloads/book2103.pdf.

Palestinian Central Bureau of Statistics. (2016). **Database of Labor Force, 2015.** Ramallah- Palestine. Retrieved from http://www.pcbs.gov.ps/Downloads/book2194.pdf.

Palestinian Information Technology Association of Companies. Retrieved from http://www.pita.ps/. (Accessed Dec. 1, 2016).

Palestinian Ministry of Health. (2014). **Palestinian National Health Strategy 2014-2016**. Ramallah-Palestine. Retrieved from http://www.moh.ps/Content/Books/qnUY18Rl5ytCU8paOCdKtuJduEK3isyvayYFMJHoOPS1A32h2ttv1Y_DOHrIaecDFUGDcRA4784Q4cmum3zeBPhP6pplSENYMOmYQ8L5OcWb2.pdf.

Palestinian Ministry of Telecommunication and Information Technology. (2013). **National Strategy for Information Technology, Telecommunication, and Mail in Palestine**. Ramallah – Palestine.

PCBS & MOH: The World Health Day (April 7th, 2014). Retrieved from http://www.pcbs.gov.ps/site/512/default.aspx?tabID=512&lang=en&ItemID=1079&mid=3172&wversion=Staging. (Accessed May 5,2017).

Priest, H., Roberts, P., and Woods, L. (2002*).* ***An overview of three different approaches to the interpretation of qualitative data. Part 1: theoretical issues.*** **The International Journal of Research Methodology in Nursing and Health Care**. *10*(1):30-42.

Rajasekar, S., Philominathan, P., Chinnathambi, V., (2013). **Research methodology**. cornell university Librery, 3, 1–53.

Ralph, L., & Holloway, J. (1969). ***Culture: A human domain***. **The University of Chicago Press Journal**, *4*(10), 395–412.

Remenyi, D., Williams, B., Money, A. & Swartz, E. (2003) **Doing research in business and management: An introduction to process and method**, London, SAGE Publications.

Reynaldo, J. Santos, A. (1999). ***"Cronbach's alpha: A tool for assessing the reliability of scales",*** **Journal of Extension***, 37*(2). 1-4.

Rho, M. J., Choi, I. Y., & Lee, J. (2014). ***Predictive factors of telemedicine service acceptance and behavioral intention of physicians***. **International Journal of Medical Informatics**, *83*(8), 559–571. http://doi.org/10.1016/j.ijmedinf.2014.05.005.

Rose, J., & Fogarty, G. J. (2006). ***Determinants of perceived usefulness and perceived ease of use in the technology acceptance model: senior consumers' adoption of self-service banking Technologies.*** **Academy of World Business, Marketing and Management Development Conference Proceedings,** *2*(10), 122–129.

Sackmann, S., Eymann, T., M¨uller, G. (2002). "**EMIKA – Real-Time Controlled Mobile Information Systems in Health Care Applications"**. Proceedings of the Second Conference on Mobile Computing in Medicine, GIEdition Lecture Notes in Informatics; 2002 April 11; Heidelberg, Germany. Bonn, Germany: GI. 151-158.

Saunders, M., Lewis, P., & Thornhill, A. (2009). **Research Methods for Business Students**. 5th edition. Pearson Education Limited. England. http://doi.org/10.1007/s13398-014-0173-7.2.

Schaper, L. K., & Pervan, G. P. (2007). ***ICT and OTs: A model of information and communication technology acceptance and utilisation by occupational therapists***. **International Journal of**

Medical Informatics, 1(76), 212–221. http://doi.org/10.1016/j.ijmedinf.2006.05.028

Sekaran, U. (2003), **Research methods for business** (4th ed.). Hoboken, NJ: John Wiley & Sons.

Sekaran, U., and Bougie, R. (2010). **Research Methods for Business: A Skill Building Approach**. 5th Edition. John Wiley and Sons, New York.

Sequist, T., Cook, D., Haas, J., & et al. (2008). "***Moving Health Information Technology Forward"***. **Journal of General Internal Medicine**, 23(4): 355-357. DOI: 10.1007/s11606-008-0551-y.

Solutions for development consulting co. (2013). **Palestinian ICT Sector 2.0: Technology Sector Development Report and Recommendations Relevant to Regional and Global Market Opportunities.** 2013, April. Retrieved from http://techpresident.com/files/MC-PITA_Palestinian_ICT_Sector_2_0_Report (5).pdf

Song, J. and Zahedi, F. (2006). ***Trust in health infomediaries***, **Decision Support Systems,** *43*(2), 390-407. https://doi.org/10. 1016/j.dss.2006.11.011.

Street, D. M. (2004). ***E-health - drivers, applications, challenges ahead and strategies: A conceptual framework***. **Med Inform**, 1(1), 39–47.

Suomi, R. (2000). "**Leapfrogging for Modern ICT Usage in the Health Care Sector".** presented at Proceedings of the Eighth European Conference on Information Systems; Vienna; 2000.1269-1275.

Tan, M., & Teo, T (2000). ***Factors influencing the adoption of internet banking.*** **Journal of the Association for Information System**, 1, (5), 2-20. http://aisel.aisnet.org/jais/vol1/iss1/5

Tewksbury,R.(2009). ***Qualitative versus quantitative methods: understanding why qualitative methods are superior for criminology and criminal justice***. **Journal of Theoretical and Philosophical Criminology**. *1*(1), 38-58.

Triandis, H. C. (1977). ***Subjective culture and interpersonal relations across culture***. **Annals of the New York academy of sciences***, 285*: 418–434. doi: 10.1111/j.1749-6632.1977.tb29370.x.

Tsiknakis, M., & Kouroubali, A. (2009). ***Organizational factors affecting successful adoption of innovative e-health services: A case study employing the FITT framework***. **International Journal of Medical Informatics,** *78*(1), 39–52. http://doi.org/10.1016/j.ijmedinf .2008.07.001.

Tung, F.-C., Chang, S.-C., & Chou, C.-M. (2008). ***An extension of trust and TAM model with IDT in the adoption of the electronic logistics Information system in HIS in the medical industry.*** **International Journal of Medical Informatics,** *77*(5), 324–335. http://doi.org/10.1016/j.ijmedinf.2007.06.006.

United Nations Development Programme, UNDP. (2016). **Human Development Report 2016**-Human Development for Everyone. USA. Retrieved from http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf.

UNSCO. (2016). UNSCO Socio-Economic Report□: Overview of the Palestinian Economy in Q1 / 2016. Office of the United Nations Special Coordinator for the Middle East Peace Process. Retrieved from http://www.unsco.org/Documents/Special/UNSCO Socio-Economic Report Q1 2016.pdf.

Venkatesh, V. (2006). ***Where to go from here? Thoughts on future directions for research on individual-level technology adoption with a focus on decision making***. **Decision Sciences**, 37(4), 497–518.

Venkatesh, V., and Bala, H. (2008***). Technology acceptance model 3 and a research agenda on interventions.*** **Decision Sciences**, 39(2): 273-315.

Venkatesh, V., and Davis, F. (2000). ***A Theoretical extension of the technology acceptance model: four longitudinal field studies***. **Journal of Management Science,** *46* (2), 186-204.

Venkatesh, V., Morris, M., Davis, G., and Davis, F. (2003). ***User acceptance of information technology: toward A unified view***. **Journal of MIS Quarterly**. *27* (3). 425-478. Retrieved from

https://nwresearch.wikispaces.com/file/view/Venkatesh+User+Acceptance+of+Information+Technology+2003.pdf.

Viitanen, J. (2009). **A User-Centred Approach to Healthcare ICT Development.** (*M.Sc.* dissertation, Espoo, Finland: Helsinki University of Technology, Department of Computer Science and Engineering). Retrieved from http://www.soberit.hut.fi/T-121/shared/thesis/lic_thesis_Viitanen.pdf.

William, C. (2000). ***Research methods***. **Journal of Business and Economic Research,** *5*(3), 65–72. Retrieved from http://www.cluteinstitute.com/ojs/index.php/JBER/article/download/2532/2578.

Wolfstadt JI, Gurwitz JH, Field TS, Lee M, Kalkar S, Wu W, & Rochon PA. (2008). ***The effect of computerized physician order entry with clinical decision support on the rates of adverse drug events: a systematic review***. **Journal of General Internal Medicine**, *23*(4):451–458.

World Health Organization (WHO). (2012). **Management of Patient Information Trends and Challenges in Member States** (Vol. 6). United Nation.

World Health Organization (WHO). **Everybody's business. Strengthening health systems to improve health outcomes:**

WHO's framework for action. 2007. Retrieved from http://www.who.int/healthsystems/strategy/everybodys_business.pdf.

World Health Organization (WHO). **STRATEGY 2004-2007: eHealth for Health-care Delivery**. 2004.

World Health Organization. (2006). **Constitution of The World Health Organization- Basic Document Forthy-Fifth Edition**. Retrieved from http://www.who.int/governance/eb/who_constitution_en.pdf.

Wu, J., Shen, W., & Lin, L. (2008). ***Testing the technology acceptance model for evaluating healthcare professionals' intention to use an adverse event peporting system.*** **International Journal for Quality in Health Care**, *20*(2), 123–129. http://doi.org/10.1093/intqhc/mzm074.

Yarbrough AK1, Smith TB. (2007).***Technology acceptance among physicians: a new take on TAM***. **Med Care Research and Review**. 64(6):650-72. Retrieved from http://www.ncbi.nlm.nih.gov/ pubmed/17717378.

Yin, R. K. (2003) **Case study research: Design and methods**, 3rd edition, London, SAGE Publications.

Yu, P., Li, H., & Gagnon, M.-P. (2009). ***Health IT acceptance factors in long-term care facilities: A cross-sectional survey***. **International Journal of Medical Informatics,** *78*(4), 219–229. http://doi.org/10.1016/j.ijmedinf.2008.07.006.

Zhang, Xiaojun. **Using diffusion of innovation theory to understand the factors impacting patients' acceptance and use of consumer e-health innovations in primary health care, Doctor of Philosophy thesis, School of Computing and Information Technology**, University of Wollongong, 2015. http://ro.uow.edu.au/theses/4547

Annex

Annex (A)

The Main Type of Research

The research defined as the process of collecting, analyzing, and interpreting data in order to understand a phenomenon (William, 2000). Based on available literature, three types of research were distinguished (Saunders et al., 2009).

- Descriptive research: the objective of this type is 'to portray an accurate profile of persons, events or situations'. The descriptive study is considered an attempt to provide an accurate and clear picture of the phenomena on which the research aims to collect data about.

- Explanatory research: it also named Causal research; It aims to discover relationships between two or more variables and to determine their effects on one another. It is defined as, seeking elaboration, enhancement, illustration, clarification of the results from one method with results from the other method. This type gives priority to collect and analysis the quantitative data, also collecting quantitative data first in the sequence and, it used to refine the results from the quantitative data (Jalil, 2013).

- Exploratory research: it defined as a valuable means of finding out what is happening to seek new insights; to ask questions and to assess phenomena in new light. This technique is best utilized when the researcher wishes to get better understanding and more information of a

topic. The more popular methods of exploratory research design are literature searches, depth interviews, focus groups, and case analyses.

Briefly, exploratory research define as, using the results from one method to help inform the other method. This type Emphasizes on qualitative data more than the quantitative data, also there is sequence in data gathering (first collecting qualitative data followed by quantitative data) and, the quantitative data used to build on or explain the initial qualitative findings (Jalil, 2013).

Several interviews with specialists in targeted area is conducted in order to understand the research problem accurately, and to reveal its ambiguity. Also, to answer the research questions which are in the form of 'WHAT', and to highlight the most important factors that influence the adoption of e-health in Palestine, Therefore, exploratory research is used in this area11

Approach of Research

The basic and applied researches can be either quantitative or qualitative approach or even mix of both. The researcher anticipates the type of data needed to respond to the research question.

1. Quantitative Research Approach

The quantitative research approach is based on the measurement of quantity. The process is described or expressed in terms of one or more quantities; the finding of this research is basically a number or a group of

numbers (Rajasekar et al., 2013). Quantitative methods are used when the researchers want to conduct statistical analysis, cover large samples or seek precision. Additionally, the qualitative research using statistical methods often begins with the collection of database on a theory or hypothesis or experiment followed by the application of descriptive or inferential statistical methods (Rajasekar et al., 2013). Quantitative data often come from surveys, structured interviews, observation checklists, or archival records (Jalil, 2013). The outcomes are often presented in graphs and tables.

2. Qualitative Research Approach

The qualitative research approach is concerned with qualitative phenomena involving quality. It is used when in-depth information is the key. Qualitative data describes the problems, behaviors, opinions, experience, attitudes, and beliefs. Also, the data are non-numerical in nature, and can come from key informant interviews, focus group discussions, open ended questionnaires, field notes, or personal log or journals (Jalil, 2013). Qualitative research usually generates descriptive results instead of predicting results. The outcome of this approach cannot be used to generalize due to typical small sample sizes, but it is used to get an initial understating of the research topic. Additionally, this type of research is mainly considered exploratory research because its goal is to give the research a full, detailed description and understanding of the study topic (Castellan, 2010).

The main difference between qualitative and quantitative research comes from the data collection instrument and data analysis instrument used in both approaches. Qualitative research takes an inductive approach in which theory is generated from research, as opposed to the deductive approach in quantitative research, in which research used to test the theory (Saunders et al., 2009).

3. Mixed Methods Research

Mixed method is a type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches to provide more in-depth information, understanding, and knowledge of the research topic. The method combines multiple techniques to collect and analyze the data also to enrich the research findings, these techniques may use at the same time or one after the other. For example, the researcher might start with face-to-face interviews with several individuals or have a focusing group and then use the result and finding to construct a questionnaire to measure attitudes in a large-scale sample with the aim of carrying out the statistical analysis (Jalil, 2013).

Each type of research approach has its limitations and that a combination between both provides a better understanding of research problems than either approach alone, also can make the research more comprehensive through avoiding the weaknesses of the two approaches mentioned above (Creswell, 2012). At the same time, the use of this approach demands greater time and effort than just using quantitative or

qualitative methods (Tewksbury, 2009). There are different types of mixed methods: Exploratory, Explanatory, and triangulation

Based on the research gap, an exploratory qualitative study was undertaken. The objective of this study was to explore the field of e-Health acceptance in Nablus governorate hospitals. Once this was undertaken, a better picture of this subject was understood. A qualitative discovery and finding was used in the formulation of the hypothesis testing for the quantitative study. Thus, hybrid methods approach was utilized to extend the breadth of the subject under investigation.

Case Study Research

The case study strategy was adopts as the appropriate strategy for research. Current sections briefly describe the case study strategy and justify its preference as opposed to other strategies.

There are multiple definitions and understandings of the case study research. Bromley (1990) defined case study as a systematic inquiry into an event or a set of related events, which aims to describe and explain the phenomenon of interest. Also, the unit of analysis can vary from an individual to a corporation.

Yin (2003) pointed that the case study is an “empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”.

Case study method enables a researcher to closely examine the data within a specific context. Additionally, this method selects a small geographical area or a very limited number of individuals as the subjects of study (Eisenhardt, 1989). It also has been widely used as a research approach in government, information technology, military, businesses, education, law and so on (Feagin et al., 1991).

Researchers can adopt either a single-case or a multiple-case design depending on the issue in question. Case studies may involve both qualitative and quantitative research methods. A common method in a case study are in-depth interviews, focus groups, surveys and content analysis. The triangulation of findings from different methods provides a systematic way to find out "What's going on here" in each case's real-world context and to ensure construct validity (Feagin et al., 1991).

An exploratory survey assesses the awareness and attitudes of practitioners were conducted in three Palestinian hospitals located in Nablus province: A-Najah National University Hospital, Rafidia Hospital, and Specialized Arab Hospital. The research focused on a small number of cases in order to reach factors affecting e-Health system in Palestinian health sector.

Types of Data Collection

This research draws on two channels for the collection of data, (primary and secondary date collection):

1. Primary Data: In this research the primary data obtained from a semi-structured interviews and structural questionnaire. The interviews conducted with some IT specialist and some system users. While the questionnaire distributed to health workers employed in the targeted Palestinian hospitals since this research aimed to describe and analyze their perspectives, then the distributed questionnaires were collected and analyzed by making statistical analysis using SPSS software.

2. Secondary Data: This data was used to introduce the related study of the research, and was obtained from several sources, for example books, journals, reports, internet websites, and many other resources and references that were available and related to the research title. A literature review was introduced to help in preparing the research and classified the purpose of it, which focused in determining factors affecting using e-Health systems in the Palestinian health sector.

Annex (B)

The Questions of the Interview

Al-Najah National University

Faculty of Graduate Studies

Engineering Management Program

Thesis Title

Factors Affecting the Acceptance of E-Health System

A Case Study of Nablus Governorate Hospitals

Student Name: Mai S.Qutob Student Number: 11356618

This interview is submitted in Fulfillment of the Requirements for the Degree of Masters of Engineering Management, Faculty of Graduate Studies at An-Najah National University, Nablus- Palestine.

This interviews aims to answering the following questions:

1. What are the methods currently used in Palestinian hospitals?
2. What is the impact of medical staff experience using computers and modern methods of communication on the acceptance of electronic administration?
3. What is the definition of Electronic health (e-Health)?
4. What is the impression about the benefits that can be obtained as a result of using e-Health?

5. Does the prevailing culture of the use of technology in the community and among employees have great influence on the use of electronic health system?
6. Does the development of Information and Communication Technologies (ICT) tools and networks affect the adoption of the use of this new technology?
7. What are the most important external factors that are affecting the using of e- Health?
8. What are the forms of e-Health technology adopted in hospitals?
9. What is the role of management when hospital implement the e-Health system?
10. What is the relationship between each of the following factors on the adoption of e-Health:

- Output quality?
- Usefulness?
- Ease of use
- Risk?
- Culture?
- System characteristic?
- Employee training?

Thank You

جامعة النجاح الوطنية – نابلس

كلية الدراسات العليا

برنامج ماجستير الادارة الهندسية

العوامل المؤثرة على قبول نظام الصحة الإلكترونية

دراسة حالة لمستشفيات محافظة نابلس

الباحثة مي سمير قطب

هذه المقابلة هي جزء من المتطلبات اللازمة للقيام بإعداد اطروحة الماجستير – برنامج ماجستير الادارة الهندسية، جامعة النجاح الوطنية – نابلس

تهدف هذه المقابلة الى الاجابة عن الاسئلة التالية:

1. ما هي الطريقة المستخدمة حاليا داخل المستشفيات في محافظة نابلس؟ (هل هي الطريقة التقليدية ام طريقة تعتمد على وجود نظام محوسب واضح الاستخدام؟)
2. ماهي العوامل الاخرى
3. ماهي المعوقات
4. ما هو تأثير خبرة الاطباء والطاقم الطبي دخل المستشفيات في استخدام أجهزة الحاســوب وأساليب الاتصال الحديثة على قبول النظام الصحي الالكتروني؟
5. ما هو تعريف النظام الصحي الالكتروني(e-Health electronic health system) ؟ (حسب ما هو مطبق داخل المستشفى)

6. ما هو الانطباع حول الفوائد التي يمكن الحصول عليها نتيجة لاستخدام النظام الصحي الالكتروني؟

7. هل الثقافة السائدة من استخدام التكنولوجيا لها تأثير كبير على استخدام النظام الصحي الالكتروني؟

8. هل التطور في ادوات تكنولوجيا المعلومات والاتصالات (ICT) يؤثر على اعتماد النظام الصحي الالكتروني داخل المستشفيات؟

9. ما هي العوامل الخارجية الأكثر أهمية التي تؤثر على استخدام النظام الصحي الالكتروني؟

10. هل اعتماد النظام الصحي الإلكتروني يؤثر على زيادة الاعمال التي يتم انجازها داخل المستشفى؟

11. هل يوجد علاقة بين كل من العوامل التالية والنظام الصحي الالكتروني:

- جودة المخرجات من استخدام النظام الالكتروني؟
- سهولة استخدام النظام؟
- امن النظام وضمان سريه المعلومات؟
- تدريب العاملين على النظام الصحي الالكتروني؟
- توفر نظام الالكترونية بخصائص وميزات قويه ؟
- المخاطر المتوقعة من استخدام النظام الصحي الالكتروني؟
- الثقافة السائدة نحو استخدام النظام الصحي الالكتروني؟

Annex (C)

Questionnaire of
Factors Affecting the Adoption of e-Health System

Dear Sir/ Mrs.

This research aims to investigate Factors Affecting the Adoption of Electronic Health systems (e-Health) in Palestine, and then introduce e-Health adoption framework which can help the hospitals and health centers to spread this developed technology among Palestinian healthcare sector.

We believe that you are the best source to reach the required information, which serve our community and its development. We all hope to find cooperation from you through answering the questions contained in this survey. We pledge not to enclose the identity of participants, as well as only use this information in scientific research.

Best Regards,

The Researcher

❖ **Part One: Personal Information**

Gender

( ) Male ( ) Female

Age

( ) 21- 30 years ( ) 31- 40 years

( ) 41 – 50 years ( ) More than 51 years.

Experience

( ) 1- 5 years ( ) 6- 10 years

Years

( ) 11 – 15 years ( ) More than 16 years.

Job

( ) Doctors ( ) Pharmacist

( ) Nurse ( ) Laboratory Technician

( ) Radiologist

Percentage of work completed using the system instead of paper tool:

( ) 100%- 80% ( ) 79%- 60%

( ) 59%- 40% ( ) 39%- 20%

( ) Other

System Usage

( ) Daily ( ) Almost daily

( ) Intermittently

Work Place

( ) Private hospital ( ) Governmental hospital

❖ **Part Two: Please select the appropriate choice that best describe your perception.**

Factor		Strongly Agree	Agree	Natural	Disagree	Strongly Disagree
System Char.	E-Health system is ease to use and clear.					
	Using e- health system makes things done faster and improve customer service.					
	E-Health system is strong because the percentage of system failure during using it is low.					
	E-Health system is protected and secured because only people who are allowed can access to system data.					
Training	The quality of training you got to use e-Health was good and enough.					
	Training reduces errors and actually helps to accomplish tasks better and faster.					
	Training increased my knowledge about system features and benefits.					
Fair of Acc.	E-Health system accurate in detecting errors which done during using it.					
	Commitment to instructions and rules about using the system reduces errors that may actually occur.					
	I take full responsibility if I use e-Health system incorrectly.					
	The training I got it reduce my fear and frequency of using system					

	Administration may regards me not responsible one if I repeated mistakes while using the system.					
Perceive Risk	The accuracy and strength of the e-Health system design reduced the perceived risk and system faults.					
	The system will not be used if it is difficult and unsafe.					
	Perceive usefulness of using system increased when the perceive risk less.					
	Using separate account for all system users by using username and password is protected e-Health system from unauthorized access.					
	E-Health system which use within the hospital is safety and high confidence					
Perceive Useful.	Using e- Health system makes the completion of the tasks and duties more easier and faster and less error.					
	Using e- Health system increases the quality of my work.					
	Using e- Health system is very useful for staff and patients together.					
Ease of Use	Ease of use of the system increase the efficiency and accomplish tasks within the hospital.					
	Ease of use of the system enhance employee acceptance to use it.					
	I can interact and deal with the e-Health system in a clear and understandable manner.					
	Using e-Health system does not require a great effort.					
	In general e-Health system is flexible and uncomplicated.					

Output Quality	Security and confidentiality level of the system increase perceive usefulness from it.					
	Safety and confidentiality level of the medical services increased after using e-Health system.					
	E-Health helps me in reduce errors in the services provided to patients.					
	Quality reports about the system outputs affect my desire to use it.					
	E-Health system useful in providing medical services with high quality and great accuracy.					
Culture	People culture and their behavior fit with the medical services in conventional methods more than e-Health medical services.					
	The shift from traditional work method to e-Health system impact my performances negatively.					
	I prefer the traditional work more than using e-Health even though I know it's more useful.					
	The usage of e-Health system facing great difficulty due to staff resistance to change towards modern systems.					

استبانة حول

العوامل المؤثرة على قبول نظام الصحة الإلكترونية

دراسة حالة للمستشفيات في محافظة نابلس

الاخ الفاضل / الاخت الفاضلة: تحية طيبة وبعد،

تسعى الباحثة في هذه الاستبانة الى معرفة العوامل المؤثرة على تبني نظام الصحة الالكترونية في المستشفيات الفلسطينية، ومن ثم اقتراح إطار نظري لقبول نظام الصحة الإلكترونية من اجل مساعدة المستشفيات الفلسطينية في صياغة استراتيجيات جديدة لتبني نظام الصحة الإلكترونية، وذلك بالتنسيق مع المؤسسات ذات الصلة من أجل تحقيق النجاح المنشود على أساس الإطار المقترح.

وحيث نؤمن انكم خير مصدر للوصول الى المعلومات المطلوبة، نتوجه اليكم وكلنا أمل ان نجد التعاون من قبلكم، وذلك من خلال الإجابة على الاسئلة الموجودة في هذه الاستبانة والتي نتعهد لكم بالمحافظة على عدم اظهار هوية المجيب عنها وعدم استخدامها في اي مجال غير مجال البحث العلمي.

ولكم جزيل الشكر والتقدير.

الباحثة :مي قطب.

جامعة النجاح الوطنية – ماجستير إدارة هندسية.

❖ **الجزء الاول: المعلومات الشخصية**

الجنس:

( ) ذكر ( ) انثى

الوظيفة

( ) دكتور ( ) صيدلي ( ) ممرض

( ) فني مختبر ( ) فني اشعة

أنجز حوالي .....من عملي باستخدام النظام بدلاً من الورق:

( ) 80%-100% ( ) 60%-79%

( ) 40%-59% ( ) 20%-39% ( ) غير ذلك

استخدم النظام بشكل:

( ) يومي ( ) شبه يومي ( ) متقطع

العمر:

( ) من 21- 30 سنة ( ) من 31- 40 سنة

( )من 41- 50 سنة ( ) اكثر من 51 سنة

عدد سنوات الخبرة:

( ) سنة – 5 سنوات ( ) 6 من – 10

( ) من 11- 15 ( ) أكثر من 16 سنة

مكان العمل

( ) مستشفى خاص ( ) مستشفى حكومي

❖ **الجزء الثاني: أرجو اختيار الدرجة التي تتناسب مع تصوراتك للأسئلة التالية:**

العامل	السؤال	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
خصائص النظام	يتميز نظام الصحة الالكترونية بسهولة استخدامه ووضوحه.					
	استخدام نظام الصحة الإلكترونية سيجعل إنجاز المهام اسرع وبالتالي خدمة عدد اكبر من المرضى والمراجعين.					
	يتميز نظام الصحة الالكترونية بالقوة بحيث لا يحصل به فشل او خلل اثناء الاستخدام.					
	يتميز النظام بسريته وحمايته للمعلومات ومنع وصول الاشخاص الغير مسموح لهم لمعلومات النظام.					
التدريب	نوعية التدريب الذي تلقيته لاستخدام النظام الالكتروني كانت كافية وجيدة.					
	يقلل التدريب من الاخطاء التي يمكن ان اقع بها ويساعدني على انجاز المهام بشكل افضل واسرع.					
	ازدادت معرفتي بخصائص النظام بعد تلقي التدريب.					
الخوف من المساءلة (من ارتكاب الخطأ)	نظام الصحة الالكترونية دقيق في اكتشاف الاخطاء اثناء الاستخدام.					
	التزامي بتعليمات وقواعد استخدام النظام يقلل من الاخطاء التي قد اقع بها عند استخدامه.					
	اتحمل المسؤولية الكاملة من استخدام النظام بشكل خاطئ.					
	قلل التدريب الذي تلقيته من خوفي وترددي من استخدامه					

	قد تعتبرني الإدارة شخص غير مسئول وغير مبالي في حـــال تكـــرر عنـــدي ارتكاب الاخطاء اثناء استخدام النظام.					
الخطورة المتوقعة	ساهمت دقة وقوة تصميم النظـــام فـــي تقليل مخاطر الامان و السرية والاعطال المرتبطة باستخدام التكنولوجيا.					
	افضل عدم اســـتخدام النظـــام اذا كـــان صعب وغير آمن.					
	تزداد الفائدة المتوقعة من استخدام النظـــام الإلكتروني كلما قلت الخطورة المتوقعة من استخدامه.					
	وجود كلمة سر لحساب المستخدم تحميه من الدخول غير المصرح به وتعرضـــه للسرقة					
	يتميز نظام الصحة الإلكترونية المستخدم داخل المستشفى بمســـتوى أمـــان جيـــد وسريه عالية للمعلومات.					
الفائدة المتوقعة	استخدام نظام الصحة الالكترونـــي يجعـــل انجاز المهام والواجبات اسهل واسرع واقل خطأً					
	استخدام نظام الصحة الالكتروني سيزيد من جودة عملي بشكل ملموس.					
	استخدام نظام الصحة الالكتروني يعـــود بالنفع على الموظفين والمرضى معا.					
سهولة الاستخدام	تزيد سهولة اســـتخدام نظـــام الصـــحة الالكترونية من كفاءة انجـــاز الاعمـــال والمهام داخل المستشفى.					
	تعزز سهولة اســـتخدام النظـــام قبـــول الموظفين له.					
	استطيع التفاعل والتعامـــل مـــع نظـــام الصـــحة الالكترونيـــة بشـــكل واضـــح ومفهوم.					

	استخدام نظام الصحة الالكترونية لا يحتاج الى جهد كبير.					
	بشكل عام نظام الصحة الالكترونية مرن وغير معقد.					
جودة المخرجات	يزيد مستوى السرية والأمان للنظام الإلكتروني من الفائدة المتوقعة من استخدامه داخل المستشفى.					
	ارتفع مستوى الامان والسرية للخدمات الطبية المقدمة بعد استخدام النظام.					
	ساعد النظام على تقليل الاخطاء في الاعمال والخدمات المقدمة للمرضى.					
	تؤثر تقارير جوده مخرجات الاعمال من النظام على رغبتي في استخدامه.					
	يساعد النظام على تقديم خدمات طبيه بجودة عالية ودقة كبيرة.					
الثقافة	تنسجم ثقافة الناس وسلوكهم مع تقديم الخدمات الطبية بالطرق التقليدية اكثر من الخدمات الطبية الالكترونية.					
	التحول من الطريقة التقليدية الى الطريقة الالكترونية اثر سلبا على ادائي.					
	افضل القيام بالأعمال بالطريقة التقليدية على الطريقة الحديثة على الرغم من معرفتي انها ستقيدني في عملي.					
	يواجه استخدام نظام الصحة الإلكتروني صعوبة كبيرة بسبب مقاومة الموظفين للتغير نحو الانظمة الحديثة.					

وشكرا على تعاونكم

Appendix (D)

Experts and Arbitrators

Table 1: Arbitrators and experts who reviewed the questionnaire

Name	Position	Org. Name
Dr. Mohammed Othman	Coordinator of Engineering Management Program and Head of Industrial Engineering	An-Najah University
Dr. Ayham Jaaron	Assistant professor at the Industrial Engineering Department, and Director of ABET Centre at the Engineering Faculty	An-Najah University
Dr. Yahya Saleh	Assistant professor at the Industrial Engineering Department, and Instructor of Statistics	An-Najah University
Dr.ahmad Alshraydeh	Head of Management Information Systems Department	An-Najah University

Annex (E)

Tables

Table (1): Number of Nursing.

Name of hospital	Rafidia	Specialized Arabic	An-Najah
Number of nurses	200	130	178
Doctor	180	20	31
Laboratory technician	33	9	21
Radiologist	21	5	10
Pharmacist	10	5	9

Resource: Human resource department, 2016

Table (2): Descriptive of statistical differences among participants according to their ages

Factors	Age	N	Mean	Std. Deviation
System Characteristics	21- 30 years	210	3.71	.722
	31-40 years	57	3.73	.692
	41- 50 years	25	3.90	.781
	More than 51 years	8	3.97	.574
	Total	300	3.74	.717
Training	21- 30 years	210	3.67	.777
	31-40 years	57	3.86	.556
	41- 50 years	25	3.88	.757
	More than 51 years	8	4.00	.563
	Total	300	3.73	.737
Fear of Accountability	21- 30 years	210	3.72	.546
	31-40 years	57	3.82	.479
	41- 50 years	25	3.90	.731
	More than 51 years	8	3.70	.763
	Total	300	3.75	.558
Perceived Risk	21- 30 years	210	3.97	.578
	31-40 years	57	3.86	.522
	41- 50 years	25	3.74	.505
	More than 51 years	8	4.03	.759
	Total	300	3.93	.569

Factors	Age	N	Mean	Std. Deviation
Perceived Usefulness	21- 30 years	210	4.10	.992
	31-40 years	57	4.11	.615
	41- 50 years	25	4.03	.739
	More than 51 years	8	3.83	.777
	Total	300	4.09	.905
Ease of Use	21- 30 years	210	3.97	.694
	31-40 years	57	4.02	.664
	41- 50 years	25	3.92	.739
	More than 51 years	8	3.97	.935
	Total	300	3.97	.695
Intention	21- 30 years	210	3.59	.718
	31-40 years	57	3.62	.677
	41- 50 years	25	3.76	.647
	More than 51 years	8	3.13	.916
	Total	300	3.60	.713
Output Quality	21- 30 years	210	3.93	.627
	31-40 years	57	3.91	.659
	41- 50 years	25	3.92	.766
	More than 51 years	8	4.05	.826
	Total	300	3.93	.648
Culture	21- 30 years	210	3.31	.943
	31-40 years	57	3.20	.889
	41- 50 years	25	3.35	1.002
	More than 51 years	8	3.38	.807
	Total	300	3.29	.931
Total Score	21- 30 years	210	3.81	.465
	31-40 years	57	3.82	.428
	41- 50 years	25	3.84	.534
	More than 51 years	8	3.84	.582
	Total	300	3.81	.465

Table (3): ANOVA Test for age differences among participants

Factors		F	Sig.
System Characteristics	Between Groups	.804	.492
Training	Between Groups	1.77	.153
Fear of Accountability	Between Groups	1.18	.318
Perceived Risk	Between Groups	1.57	.197
Perceived Usefulness	Between Groups	.275	.843
Ease of Use	Between Groups	.126	.944
Intention	Between Groups	1.647	.179
Output Quality	Between Groups	.111	.954
Culture	Between Groups	.308	.820
Total Score	Between Groups	.058	.982

Table (4): Descriptive of statistical differences among participants according to their Experience years.

Factors	Year Experience	N	Mean	Std. Deviation
System Characteristics	1- 5 years	192	3.73	.697
	6- 10 years	53	3.72	.744
	11 – 15 years	30	3.54	.866
	More than 16 years.	25	4.03	.546
	Total	300	3.74	.717
Training	1- 5 years	192	3.67	.764
	6- 10 years	53	3.87	.632
	11 – 15 years	30	3.76	.758
	More than 16 years.	25	3.91	.677
	Total	300	3.73	.737
Fear of Accountability	1- 5 years	192	3.72	.526
	6- 10 years	53	3.80	.523
	11 – 15 years	30	3.71	.684
	More than 16 years.	25	3.96	.673
	Total	300	3.75	.558

Factors	Year Experience	N	Mean	Std. Deviation
Perceived Risk	1- 5 years	192	3.95	.586
	6- 10 years	53	3.92	.538
	11 – 15 years	30	3.91	.503
	More than 16 years.	25	3.79	.587
	Total	300	3.93	.569
Perceived Usefulness	1- 5 years	192	4.12	.987
	6- 10 years	53	4.03	.677
	11 – 15 years	30	4.07	.907
	More than 16 years.	25	4.04	.676
	Total	300	4.09	.905
Ease of Use	1- 5 years	192	3.96	.679
	6- 10 years	53	4.03	.682
	11 – 15 years	30	3.95	.848
	More than 16 years.	25	3.98	.686
	Total	300	3.97	.695
Intention	1- 5 years	192	3.61	.712
	6- 10 years	53	3.60	.762
	11 – 15 years	30	3.50	.643
	More than 16 years.	25	3.62	.726
	Total	300	3.60	.713
Output Quality	1- 5 years	192	3.93	.628
	6- 10 years	53	3.91	.734
	11 – 15 years	30	3.89	.627
	More than 16 years.	25	4.02	.659
	Total	300	3.93	.648
Culture	1- 5 years	192	3.24	.793
	6- 10 years	53	3.50	.910
	11 – 15 years	30	3.20	.720
	More than 16 years.	25	3.41	.914
	Total	300	3.29	.821
Total Score	1- 5 years	192	3.80	.444
	6- 10 years	53	3.84	.526
	11 – 15 years	30	3.76	.526
	More than 16 years.	25	3.89	.478
	Total	300	3.81	.465

Table (5): ANOVA Test for age differences among participants

Factors		F	Sig.
System Characteristics	Between Groups	2.172	.091
Training	Between Groups	1.565	.198
Fear of Accountability	Between Groups	1.607	.188
Perceived Risk	Between Groups	.621	.602
Perceived Usefulness	Between Groups	.159	.924
Ease of Use	Between Groups	.140	.936
Intention	Between Groups	.213	.887
Output Quality	Between Groups	.243	.866
Culture	Between Groups	1.696	.168
Total Score	Between Groups	.495	.686

Table (6): Descriptive of statistical differences among participants according to their Job.

Factors	Job	N	Mean	Std. Deviation
System characteristics	Doctor	77	3.56	.738
	Pharmacist	19	3.47	.533
	Nurse	148	3.88	.744
	Laboratory Technician	37	3.76	.582
	Radiologist	19	3.57	.600
	Total	300	3.74	.717
Training	Doctor	77	3.47	.792
	Pharmacist	19	3.53	.602
	Nurse	148	3.87	.692
	Laboratory Technician	37	3.81	.674
	Radiologist	19	3.79	.826
	Total	300	3.73	.737
Fair of Accountability	Doctor	77	3.54	.578
	Pharmacist	19	3.63	.605
	Nurse	148	3.88	.538
	Laboratory Technician	37	3.75	.528
	Radiologist	19	3.75	.370
	Total	300	3.75	.558

Factors	Job	N	Mean	Std. Deviation
Perceived Risk	Doctor	77	3.83	.554
	Pharmacist	19	3.69	.464
	Nurse	148	4.02	.608
	Laboratory Technician	37	3.90	.478
	Radiologist	19	3.88	.473
	Total	300	3.93	.569
Usefulness	Doctor	77	3.87	.776
	Pharmacist	19	3.89	.629
	Nurse	148	4.25	1.029
	Laboratory Technician	37	4.09	.617
	Radiologist	19	3.93	.893
	Total	300	4.09	.905
Ease of Use	Doctor	77	3.77	.782
	Pharmacist	19	3.98	.447
	Nurse	148	4.07	.695
	Laboratory Technician	37	4.08	.557
	Radiologist	19	3.85	.635
	Total	300	3.97	.695
Intention	Doctor	77	3.48	.690
	Pharmacist	19	3.58	.559
	Nurse	148	3.66	.747
	Laboratory Technician	37	3.57	.747
	Radiologist	19	3.68	.582
	Total	300	3.60	.713
Output Quality	Doctor	77	3.73	.620
	Pharmacist	19	3.54	.476
	Nurse	148	4.06	.681
	Laboratory Technician	37	3.99	.512
	Radiologist	19	3.95	.565
	Total	300	3.93	.648
Culture	Doctor	77	3.11	.766
	Pharmacist	19	3.11	.578
	Nurse	148	3.44	.883
	Laboratory	37	3.36	.767

	Technician			
	Radiologist	19	2.98	.623
	Total	300	3.29	.821
Total Score	Doctor	77	3.63	.479
	Pharmacist	19	3.62	.298
	Nurse	148	3.93	.474
	Laboratory Technician	37	3.84	.373
	Radiologist	19	3.74	.325
	Total	300	3.81	.465

Table (7): ANOVA Test for Job differences among participants

Factors		F	Sig.
System Characteristics	Between Groups	3.713	.006*
Training	Between Groups	4.468	.002*
Fair of Accountability	Between Groups	5.123	.001*
Perceived Risk	Between Groups	2.449	.046*
Perceived Usefulness	Between Groups	2.641	.034*
Ease of Use	Between Groups	2.685	.032*
Intention	Between Groups	.881	.476
Output Quality	Between Groups	5.574	.000*
Culture	Between Groups	3.143	.015*
Total Score	Between Groups	7.015	.000*

*. The mean difference is significant at the 0.05 level.

Table (8): LSD Test for age differences among participants (System Characteristic)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
System Characteristic	Doctor	Pharmacists	.085	.639
		Nurses	-.322*	.001
		laboratory Technicians	-.198	.160
		Radiologist	-.007	.968
	Pharmacists	Doctor	-.085	.639
		Nurses	-.406*	.019
		laboratory Technicians	-.283	.156
		Radiologist	-.092	.687
	Nurses	Doctor	.322*	.001
		Pharmacists	.406*	.019
		laboratory Technicians	.123	.342
		Radiologist	.314	.068
	laboratory Technicians	Doctor	.198	.160
		Pharmacists	.283	.156
		Nurses	-.123	.342
		Radiologist	.191	.338
	Radiologist	Doctor	.007	.968
		Pharmacists	.092	.687
		Nurses	-.314	.068
		laboratory Technicians	-.191	.338

*. The mean difference is significant at the 0.05 level.

Table (9): LSD Test for age differences among participants (Training)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Training	Doctor	Pharmacists	-.059	.750
		Nurses	-.402*	.000
		laboratory Technicians	-.343*	.018
		Radiologist	-.322	.082
	Pharmacists	Doctor	.059	.750
		Nurses	-.343	.052
		laboratory Technicians	-.284	.163
		Radiologist	-.263	.261
	Nurses	Doctor	.402*	.000
		Pharmacists	.343	.052
		laboratory Technicians	.059	.659
		Radiologist	.080	.649
	laboratory Technicians	Doctor	.343*	.018
		Pharmacists	.284	.163
		Nurses	-.059	.659
		Radiologist	.021	.916
	Radiologist	Doctor	.322	.082
		Pharmacists	.263	.261
		Nurses	-.080	.649
		laboratory Technicians	-.021	.916

*. The mean difference is significant at the 0.05 level.

Table (10): LSD Test for age differences among participants (Fair of Accountability)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Fair of Accountability **Fair of Accountability**	Doctor	Pharmacists	-.091	.512
		Nurses	-.337*	.000
		laboratory Technicians	-.211	.053
		Radiologist	-.207	.138
	Pharmacists	Doctor	.091	.512
		Nurses	-.245	.065
		laboratory Technicians	-.120	.435
		Radiologist	-.116	.512
	Nurses	Doctor	.337*	.000
		Pharmacists	.245	.065
		laboratory Technicians	.126	.209
		Radiologist	.130	.328
	laboratory Technicians	Doctor	.211	.053
		Pharmacists	.120	.435
		Nurses	-.126	.209
		Radiologist	.004	.979
	Radiologist	Doctor	.207	.138
		Pharmacists	.116	.512
		Nurses	-.130	.328
		laboratory Technicians	-.004	.979

*. The mean difference is significant at the 0.05 level.

Table (11): LSD Test for age differences among participants (Perceived Risk)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Perceived Risk	Doctor	Pharmacists	.139	.336
		Nurses	-.189*	.018
		laboratory Technicians	-.069	.541
		Radiologist	-.050	.727
	Pharmacists	Doctor	-.139	.336
		Nurses	-.328*	.017
		laboratory Technicians	-.208	.192
		Radiologist	-.189	.301
	Nurses	Doctor	.189*	.018
		Pharmacists	.328*	.017
		laboratory Technicians	.120	.247
		Radiologist	.139	.313
	laboratory Technicians	Doctor	.069	.541
		Pharmacists	.208	.192
		Nurses	-.120	.247
		Radiologist	.018	.908
	Radiologist	Doctor	.139	.727
		Pharmacists	-.189*	.301
		Nurses	-.069	.313
		laboratory Technicians	-.050	.908

*. The mean difference is significant at the 0.05 level.

Table (12): LSD Test for age differences among participants (Perceived Usefulness)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Perceived Usefulness	Doctor	Pharmacists	-.020	.930
		Nurses	-.373*	.003
		laboratory Technicians	-.216	.230
		Radiologist	-.055	.809
	Pharmacists	Doctor	.020	.930
		Nurses	-.353	.107
		laboratory Technicians	-.195	.440
		Radiologist	-.035	.904
	Nurses	Doctor	.373*	.003
		Pharmacists	.353	.107
		laboratory Technicians	.158	.339
		Radiologist	.318	.146
	laboratory Technicians	Doctor	.216	.230
		Pharmacists	.195	.440
		Nurses	-.158	.339
		Radiologist	.160	.526
	Radiologist	Doctor	.055	.809
		Pharmacists	.035	.904
		Nurses	-.318	.146
		laboratory Technicians	-.160	.526

*. The mean difference is significant at the 0.05 level.

Table (13): LSD Test for age differences among participants (Ease of Use)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Ease of Use	Doctor	Pharmacists	-.205	.246
		Nurses	-.294*	.003
		laboratory Technicians	-.307*	.026
		Radiologist	-.079	.656
	Pharmacists	Doctor	.205	.246
		Nurses	-.089	.597
		laboratory Technicians	-.102	.599
		Radiologist	.126	.572
	Nurses	Doctor	.294*	.003
		Pharmacists	.089	.597
		laboratory Technicians	-.014	.915
		Radiologist	.215	.201
	laboratory Technicians	Doctor	.307*	.026
		Pharmacists	.102	.599
		Nurses	.014	.915
		Radiologist	.228	.240
	Radiologist	Doctor	.079	.656
		Pharmacists	-.126	.572
		Nurses	-.215	.201
		laboratory Technicians	-.228	.240

*. The mean difference is significant at the 0.05 level.

Table (14): LSD Test for age differences among participants (Output Quality)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Output Quality	Doctor	Pharmacists	.190	.161
		Nurses	-.335*	.088
		laboratory Technicians	-.262*	.126
		Radiologist	-.220	.161
	Pharmacists	Doctor	-.190	.161
		Nurses	-.525*	.153
		laboratory Technicians	-.452*	.178
		Radiologist	-.411*	.204
	Nurses	Doctor	.335*	.088
		Pharmacists	.525*	.153
		laboratory Technicians	.073	.116
		Radiologist	.115	.153
	laboratory Technicians	Doctor	.262*	.126
		Pharmacists	.452*	.178
		Nurses	-.073	.116
		Radiologist	.042	.178
	Radiologist	Doctor	.220	.161
		Pharmacists	.411*	.204
		Nurses	-.115	.153
		laboratory Technicians	-.042	.178

*. The mean difference is significant at the 0.05 level.

Table (15): LSD Test for age differences among participants (Culture)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Culture	Doctor	Pharmacists	.000	.233
		Nurses	-.441*	.128
		laboratory Technicians	-.162	.182
		Radiologist	.211	.233
	Pharmacists	Doctor	.000	.233
		Nurses	-.441*	.222
		laboratory Technicians	-.162	.257
		Radiologist	.211	.295
	Nurses	Doctor	.441*	.128
		Pharmacists	.441*	.222
		laboratory Technicians	.279	.167
		Radiologist	.651*	.222
	laboratory Technicians	Doctor	.162	.182
		Pharmacists	.162	.257
		Nurses	-.279	.167
		Radiologist	.373	.257
	Radiologist	Doctor	.000	.233
		Pharmacists	-.441*	.128
		Nurses	-.162	.182
		laboratory Technicians	.211	.233

*. The mean difference is significant at the 0.05 level.

Table (16): Descriptive of statistical differences among participants according to their Completed Works.

Factors	Job	N	Mean	Std. Deviation
System characteristics	100%- 80%	167	3.81	.720
	79%- 60%	84	3.74	.685
	59%- 40%	30	3.53	.721
	39%- 20%	16	3.41	.706
	Others	3	3.25	.901
	Total	300	3.74	.717
Training	100%- 80%	167	3.77	.781
	79%- 60%	84	3.81	.628
	59%- 40%	30	3.46	.795
	39%- 20%	16	3.52	.620
	Others	3	3.67	.577
	Total	300	3.73	.737
Fair of Accountability	100%- 80%	167	3.80	.550
	79%- 60%	84	3.75	.572
	59%- 40%	30	3.66	.549
	39%- 20%	16	3.46	.520
	Others	3	3.40	.529
	Total	300	3.75	.558
Perceived Risk	100%- 80%	167	3.92	.559
	79%- 60%	84	4.04	.548
	59%- 40%	30	3.75	.666
	39%- 20%	16	3.84	.548
	Others	3	3.73	.416
	Total	300	3.93	.569
Usefulness	100%- 80%	167	4.17	1.015
	79%- 60%	84	4.07	.731
	59%- 40%	30	4.02	.672
	39%- 20%	16	3.54	.815
	Others	3	3.78	.192
	Total	300	4.09	.905
Ease of Use	100%- 80%	167	4.05	.668
	79%- 60%	84	3.98	.715
	59%- 40%	30	3.91	.680
	39%- 20%	16	3.39	.609
	Others	3	3.47	.924
	Total	300	3.97	.695

Factors	Job	N	Mean	Std. Deviation
Intention	100%- 80%	167	3.59	.731
	79%- 60%	84	3.66	.664
	59%- 40%	30	3.43	.728
	39%- 20%	16	3.69	.814
	Others	3	3.50	.000
	Total	300	3.60	.713
Output Quality	100%- 80%	167	3.97	.636
	79%- 60%	84	3.98	.582
	59%- 40%	30	3.79	.749
	39%- 20%	16	3.48	.748
	Others	3	3.60	.693
	Total	300	3.93	.648
Culture	100%- 80%	167	3.21	.856
	79%- 60%	84	3.37	.782
	59%- 40%	30	3.47	.860
	39%- 20%	16	3.50	.544
	Others	3	3.44	.192
	Total	300	3.29	.821
Total Score	100%- 80%	167	3.84	.463
	79%- 60%	84	3.85	.447
	59%- 40%	30	3.70	.496
	39%- 20%	16	3.53	.418
	Others	3	3.53	.512
	Total	300	3.81	.465

Table (17): ANOVA Test for Completed Works differences among participants

Factors		F	Sig.
System Characteristics	Between Groups	2.272	.062
Training	Between Groups	1.706	.149
Fair of Accountability	Between Groups	1.913	.108
Perceived Risk	Between Groups	1.798	.129
Perceived Usefulness	Between Groups	1.977	.098
Ease of Use	Between Groups	3.969	.004*
Intention	Between Groups	.643	.632
Output Quality	Between Groups	2.881	.023*
Culture	Between Groups	1.254	.288
Total Score	Between Groups	2.632	.035

*. The mean difference is significant at the 0.05 level.

Table (18): LSD Test for Completed Works differences among participants (Ease of Use)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Ease of Use	100%- 80%	79% - 60%	.072	.432
		59% - 40%	.144	.289
		39% - 20	.663*	.000
		Other	.584	.143
	79%- 60%	100% - 80%	-.072	.432
		59% - 40%	.072	.620
		39% - 20	.591*	.002
		Other	.512	.202
	59%- 40%	100% - 80%	-.144	.289
		79% - 60%	-.072	.620
		39% - 20	.519*	.015
		Other	.440	.288
	39%- 20%	100% - 80%	-.663*	.000
		79% - 60%	-.591*	.002
		39% - 20	-.519*	.015
		Other	-.079	.854
	Other	100% - 80%	-.584	.143
		79% - 60%	-.512	.202
		59% - 40%	-.440	.288
		39% - 20	.079	.854

*. The mean difference is significant at the 0.05 level.

Table (19): LSD Test for Completed Works differences among participants (Output Quality)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Output Quality	100%- 80%	79% - 60%	-.012	.888
		59% - 40%	.178	.162
		39% - 20	.496*	.003
		Other	.371	.320
	79%- 60%	100% - 80%	.012	.888
		59% - 40%	.190	.164
		39% - 20	.508*	.004
		Other	.383	.309
	59%- 40%	100% - 80%	-.178	.162
		79% - 60%	-.190	.164
		39% - 20	.318	.109
		Other	.193	.618
	39%- 20%	100% - 80%	-.496*	.003
		79% - 60%	-.508*	.004
		39% - 20	-.318	.109
		Other	-.125	.756
	Other	100% - 80%	-.371	.320
		79% - 60%	-.383	.309
		59% - 40%	-.193	.618
		39% - 20	.125	.756

*. The mean difference is significant at the 0.05 level.

Table (20): Descriptive of statistical differences among participants according to their System Usage.

Factors	System Usage	N	Mean	Std. Deviation
System characteristics	Daily	235	3.72	.743
	Almost daily	50	3.83	.579
	Intermittently	15	3.62	.731
	Total	300	3.74	.717
Training	Daily	235	3.78	.734
	Almost daily	50	3.66	.577
	Intermittently	15	3.27	1.071
	Total	300	3.73	.737
Fair of Accountability	Daily	235	3.78	.577
	Almost daily	50	3.67	.444
	Intermittently	15	3.63	.585
	Total	300	3.75	.558
Perceived Risk	Daily	235	3.94	.587
	Almost daily	50	3.90	.519
	Intermittently	15	3.91	.453
	Total	300	3.93	.569
Usefulness	Daily	235	4.11	.977
	Almost daily	50	4.07	.567
	Intermittently	15	3.89	.613
	Total	300	4.09	.905
Ease of Use	Daily	235	3.98	.730
	Almost daily	50	3.97	.547
	Intermittently	15	3.99	.612
	Total	300	3.97	.695
Intention	Daily	235	3.61	.710
	Almost daily	50	3.58	.717
	Intermittently	15	3.50	.779
	Total	300	3.60	.713
Output Quality	Daily	235	3.94	.669
	Almost daily	50	3.90	.539
	Intermittently	15	3.89	.684
	Total	300	3.93	.648
Culture	Daily	235	3.27	.842
	Almost daily	50	3.40	.744
	Intermittently	15	3.40	.747
	Total	300	3.29	.821
Total Score	Daily	235	3.82	.482
	Almost daily	50	3.80	.366
	Intermittently	15	3.72	.502
	Total	300	3.81	.465

Table (21): ANOVA Test for System Usage differences among participants

Factors		F	Sig.
System Characteristics	Between Groups	.666	.515
Training	Between Groups	3.740	.025*
Fair of Accountability	Between Groups	1.184	.308
Perceived Risk	Between Groups	.104	.901
Perceived Usefulness	Between Groups	.431	.651
Ease of Use	Between Groups	.005	.995
Intention	Between Groups	.182	.883
Output Quality	Between Groups	.096	.908
Culture	Between Groups	.684	.505
Total Score	Between Groups	.340	.721

*. The mean difference is significant at the 0.05 level.

Table (22): LSD Test for Completed Works differences among participants (Training)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Training	Daily	Almost daily	.117	.303
		Intermittent	.511*	.009
	Almost daily	Daily	-.117	.303
		Intermittent	.393	.068
	Intermittently	Daily	-.511*	.009
		Almost daily	-.393	.068

*. The mean difference is significant at the 0.05 level.

Table (23): Statistical Differences among Participants According to their Work Place.

Factors	Gender	N	Mean	Std. Deviation
System Characteristics	Private	150	3.64	.809
	Governmental	150	3.83	.601
Training	Private	150	3.73	.722
	Governmental	150	3.73	.754
Fear of Accountability	Private	150	3.70	.585
	Governmental	150	3.80	.527
Perceived Risk	Private	150	3.95	.574
	Governmental	150	3.91	.565
Perceived Usefulness	Private	150	3.95	.823
	Governmental	150	4.23	.963
Ease of Use	Private	150	3.90	.757
	Governmental	150	4.05	.622
Intention	Private	150	3.65	.663
	Governmental	150	3.54	.757
Output Quality	Private	150	3.87	.680
	Governmental	150	3.98	.612
Culture	Private	150	3.36	.747
	Governmental	150	3.22	.886
Total Score	Private	150	3.78	.501
	Governmental	150	3.85	.425

Table (24): Independent Samples Test for Work Place Differences among Participants

Factors	t-test for Equality of Means		
	t	Df	Sig. (2-tailed)
System Characteristics	-2.269	298	.024
Training	-.026	298	.979
Fear of Accountability	-1.515	298	.131
Perceived Risk	.466	298	.641
Perceived Usefulness	-2.685	298	.008
Ease of Use	-1.867	298	.063
Intention	1.339	298	.182
Output Quality	-1.392	298	.165
Culture	1.479	298	.140
Total Score	-1.357	298	.176

Table (25): Describe Pearson Correlation between all factors.

Factor		System Characteristics	Training	Fair of Accountability	Perceived Risk	Perceived Usefulness	Ease of Use	Intention	Output Quality	Culture
System Characteristics	Pearson Correlation	1	.549**	.615**	.438**	.510**	.631**	.138*	.627**	.081
	Sig. (2-tailes)		.000	.000	.000	.000	.000	.017	.000	.159
Training	Pearson Correlation	.549**	1	.552**	.404**	.396**	.524**	.177**	.496**	.090
	Sig. (2-tailes)	.000		.000	.000	.000	.000	.002	.000	.122
Fair of Accountability	Pearson Correlation	.615**	.552**	1	.485**	.442**	.522**	.146*	.546**	.136*
	Sig. (2-tailes)	.000	.000		.000	.000	.000	.011	.000	.018
Perceived Risk	Pearson Correlation	.438**	.404**	.485**	1	.269**	.526**	.175**	.528**	.123*
	Sig. (2-tailes)	.000	.000	.000		.000	.000	.002	.000	.033
Perceived Usefulness	Pearson Correlation	.510**	.396**	.442**	.269**	1	.521**	.131*	.450**	.039
	Sig. (2-tailes)	.000	.000	.000	.000		.000	.024	.000	.504
Ease of Use	Pearson Correlation	.631**	.524**	.522**	.526**	.521**	1	.162**	.674**	.008
	Sig. (2-tailes)	.000	.000	.000	.000	.000		.005	.000	.895
Intention	Pearson	.138*	.177**	.146*	.175**	.131*	.162**	1	.203**	.089

	Correlation									
	Sig. (2-tailes)	.017	.002	.011	.002	.024	.005		.000	.122
Output Quality	Pearson Correlation	.627**	.496**	.546**	.528**	.450**	.674**	.203**	1	.117*
	Sig. (2-tailes)	.000	.000	.000	.000	.000	.000	.000		.042
Culture	Pearson Correlation	.081	.090	.136*	.123*	.039	.008	.089	.117*	1
	Sig. (2-tailes)	.159	.122	.018	.033	.504	.895	.122	.042	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

جامعة النجاح الوطنية
كلية الدراسات العليا

العوامل المؤثرة على قبول نظام الصحة الإلكترونية
دراسة حالة لمستشفيات محافظة نابلس

إعداد
مي سمير قطب

إشراف
د. بكر عبد الحق

قدمت هذه الأطروحة استكمالاً لمتطلبات الحصول على درجة الماجستير في الإدارة الهندسية بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس، فلسطين.
2017م

العوامل المؤثرة على قبول نظام الصحة الإلكترونية

دراسة حالة لمستشفيات محافظة نابلس

إعداد

مي سمير قطب

اشراف

د. بكر عبد الحق

الملخص

هدفت هذه الدراسة الى معرفة العوامل المؤثرة على مدى قبول المهنيين والطبيين لاستخدام نظام الصحية الإلكترونية في المستشفيات الفلسطينية وإدخال إطار الصحة الإلكترونية الذي يمكن أن تعتمده المستشفيات والمراكز الصحية الفلسطينية من أجل الاستفادة من التكنولوجيا بشكل فعال في جميع عملياتها وانشطتها، وقد تم إجراء هذه الدراسة من خلال تطبيقها على ثلاثة مستشفيات في محافظة نابلس، وتم اختيار عينة عشوائية بسيطة من مستشفى رفيديا الجراحي، ومستشفى جامعة النجاح الوطنية، والمستشفى العربي التخصصي في محافظة نابلس.

وتم اعتماد إطار البحث الذي يقوم على نموذج قبول التكنولوجيا (TAM) من خلال استعراض الأدبيات ذات الصلة وعرض رأي الخبراء في عملية تصميم الاطار الخاص بالدراسة الذي احتوي على مجموعة من العوامل وهي كل من الفائدة المتوقعة، وسهولة الاستخدام، والموقف، ونوايا الاستخدام، وتمتد مع العوامل الخارجية، وهي)خصائص النظام، والتدريب، والخوف من المساءلة، والمخاطر المتوقعة، والثقافة، وجودة المخرجات).

واعتمدت الباحثة على الاسلوب الكمي والنوعي في اجراء الدراسة بهدف الإجابة على أسئلة البحث واختبار الفرضيات، وتم جمع البيانات النوعية عن طريق المقابلات شبه المنظمة مع المتخصصين في تكنولوجيا المعلومات ومستخدمي النظام في المستشفيات التي شملتها الدراسة من أجل الحصول على فهم أفضل لحالة نظام الصحة الإلكترونية والفوائد والتحديات والعقبات. وعلاوة على ذلك، كانت البيانات الكمية مرتبطة بالعوامل المؤثرة على قبول الصحة

الإلكترونية التي تم جمعها من خلال على عينة عشوائية (ن = 300) من المهنيين الصحيين في المستشفيات المستهدفة من الدراسة، وقد اشتملت العينة على 360 استبانة، استرد منها 328 استبانة اي بمعدل استجابة وصل الى 83.3٪.

واشارت نتائج تحليل البيانات التي تم جمعها إلى أن سهولة الاستخدام والفائدة المتوقعة وجودة المخرجات هي أهم العوامل التي تؤثر على اعتماد نظام الصحة الإلكترونية من قبل مستشفيات. وبالإضافة إلى ذلك، فإن المخاطر المتوقعة، وخصائص النظام، والخوف من المساءلة، تؤثر على اعتماد الابتكار في مجال الصحة الإلكترونية بدرجة أقل من بقية العوامل التي شملتها الدراسة.

واستنادا إلى نتائج الدراسة، اشارت الباحثة الى مجموعة من التوصيات ومنها ضرورة قيام المؤسسات الصحية الفلسطينية بالعمل على صياغة استراتيجيات جديدة، وتعزيز العمليات التشغيلية، وتطوير البنية التحتية للصحة الإلكترونية، وتقديم خدمات ذات جودة عالية، والتنسيق مع كيانات أخرى مثل شركات تكنولوجيا المعلومات والاتصالات، وبرامج نقل المكاتب، والتي من شأنها أن تكون مفيدة في زيادة ثقة العاملين في مجال الرعاية الطبية من أجل نشر تكنولوجيا الصحة الإلكترونية في المجتمع الفلسطيني.